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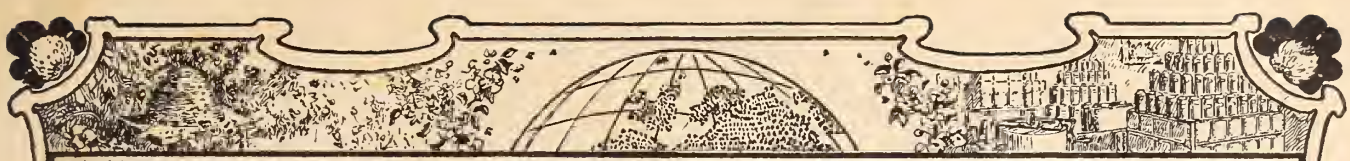

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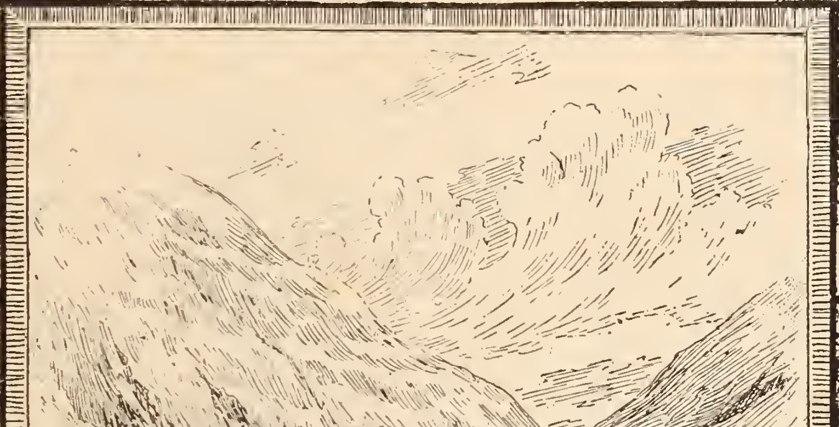

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The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their party or school, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

Vol. I. No. 1. JUNE, 1919. Monthly ; 2/6 a Year.

Editorial.

Foreword. With the prospects of a World Peace that promises to be in one way or the other responsible for the institution of international friendship and co-operation, and for the wider exchange of knowledge, THE BEE WORLD makes its appearance.

Science and education have no regard for geographical boundaries, nor for the much abused gospel of nationalism, originally representing, in the form of patriotism, the devotion of the individual to the interests of his community, but finally becoming everywhere transformed into communal selfishness. No! The advancement of the human race, through the creation of greater intellectualism, demands from all people mutual help, a freer exchange of thought, and the establishment of the international spirit in every branch of culture.

With this principle before us we make no special appeal to any section of apiarists. Whilst serving on the one hand the highest interests of British bee culture—to the valuable teachings of its pioneers the Editor of THE BEE WORLD is greatly indebted—this periodical on the other hand has no smaller function in aiming at the exposition of the best gifts of other people to the Science and Practice of Bee Culture.

To perform alone these educational duties is clearly beyond our personal scope, but the generous support of several leading apiarists in Great Britian and abroad, and the wide encouragement of numerous friends of whose confidence we feel most proud, have alone overcome our hesitation to undertake this heavy task. Our earnest hope is to continue enjoying their priceless confidence, to deserve many additional friends, and to be able to serve, to the best of our humble capacity, the Cause of bee culture, which is at one and the same time an interesting science, a commercial business, a mental and a bodily recreation, as well as a respectable contributor of a valuable food for the people, great and small, adults and children.

Impartial and fearless, modern and progressive, THE BEE WORLD in its infancy greets the Beekeeping Fraternity in all lands, welcomes their advice and criticism, and opens its pages to all lovers of the Honey Bee, trusting that through their continued support it may be destined to enjoy a quick development and a long life.

The 1919 Season. So far, a perfect bee weather has prevailed during almost the whole of May and June. British apiarists in many localities have already had a good surplus of both comb and extracted honey, and breeding is equally going apace. No doubt an interchange of rainy and sunny weather would have provided better conditions for greater necter secretion ; but taking all factors into consideration, beekeepers in Great Britain should be more than satified as a whole with the present progress of the season. We regret therefore to learn that the entries for the Royal Show at Cardiff this year are comparatively insignificant. No doubt this is chiefly due to to the modesty of most apiarists, who had always been interested in exhibitions, but who are prevented now from giving this Show their serious attention through over-occupation. We think that it will be a great pity if the honey section of the Show will not be a success, and we cannot but endorse the appeal of our esteemed contemporary, **The British Bee Journal,** to those who can help, and they are not by any means few.

Apis Fasciata The reputation of this peculiar strain of bees for unsurpassed beauty is well known ; but equally advertised are its defects. The Egyptian bee, according to the authority of Dr. Lewis Gough, amongst others, hardly knows in the Nile Valley the diseases familiar to other bee strains. The question is whether under English conditions, and in a dense I.W.D. atmosphere, this apparent immunity of the Egyptian bee is other than a misleading one. Apparently it is not a false immunity, but the ideal Egyptian climate for beekeeping should not be lost sight of. It makes all the difference to have a favourable climate facilitating regular cleansing flights and stimulative to compensatory breeding, especially when the queen is worthy of survival. Disease of adult bees can hardly make a footing under such conditions.

The other question is whether under modern conditions, the Egyptian bee, which has been so much neglected for decades, can possibly shake off some of the defects attributed to it, and which are apparently the consequence of adaptation to unfavourable conditions.

A third point is to experiment with the evolution of selected Egyptian hybrids, and to compare their resistance to English climatic conditions and to disease incidence with present predominant strains, as well as with pure Egyptians, one's principal aim being to raise a selected hybrid Egyptian bee that may be truly considered superior to the present popular strains.

We did our utmost last year to secure Egyptian bees for experimental purposes, but our efforts did not succeed. Early this year we arranged through the courtesy of Dr. Lewis Gough and Mr. H. Helbawy, of the Egyptian Ministry of Agriculture, to import nuclei of Egyptian bees from their native land, but the political upheaval in Egypt unfortunately prevented the realisation of our hopes up to the present. Mr. F. M. Claridge, of Copford, was fortunate enough, however, to secure this spring one fertile Egyptian queen in a safe condition, and from her progeny he kindly favoured us with a virgin queen. The following note accompanied his gift :—"I have sent you one of the first batch of Egyptian virgins out. You will find you will have to exercise very great care in introducing, as I find the virgins are inclined to attack the bees first, but not always. I have already lost four out of this batch ; three dead in nursery and one balled. As they were reared by Italians, I fancy they are rather larger than their mother queen ; they are certainly lighter coloured **at present.**"

The virgin Egyptian referred to certainly had a conspicuous golden yellow colour and a respectable size. Undoubtedly we could have secured her safe introduction by utilising combs of rapidly-hatching brood in a **brood-hatching chamber,** but owing to the over-delayed receipt of this appliance and the absurd shortage in the market of frames and other important equipments, we have despaired of conducting even more important experiments. We certainly could not secure even a simple travelling box to take aluminium combs, and were it not for the genial support of Mr. Robert Lee, we could never have established this year a decent apiary. In spite of a comparatively long ceremony of introduction and of other precautions the virgin queen referred to was finally found dead on the floor board of the hive. It will much interest us therefore to learn from Mr. Claridge of his further experience.

Wintering Bees

It may seem a little premature in June to discuss **wintering bees,** but as will be seen from the contribution by Mr. H. E. C. Carter, Secretary to the North West District, Kent Beekeepers' Association, it is a question of securing the desired strain of bees, from the selected queen, sufficiently early before the incidence of unfavourable conditions that check breeding. Whilst being engaged in the honey harvest, one's attention should equally be directed to the future prospects of the colony. An undesirable strain should be eliminated, weaklings should be united or strengthened, and the lessons learnt from previous wintering put into practice, whilst there are opportunities for doing so. Should one attempt at correction fail, there will be then one or more chances. Leaving preparations for wintering till very late in the fall is almost valueless. It will probably be a great disturbance to the bees : a contributor to more harm than good.

One of the earliest wintering preparations is re-queening ; but unless it is done sufficiently early to ensure young autumn progeny in good proportion, its effect is clearly negligible, so far as winter conditions are concerned. This we have repeatedly emphasised in other contemporaries, in view of the widespread belief in the magic of re-queening in the fall, as a means for combating I.W. disease. Opinoins will differ however regarding the effect of re-queening on the foraging activities of bees. Personally we are inclined to think that it is preferable to the average apiarist not to leave re-queening later than early July. Stimulative feeding at the same time is probably an advantage, unless the honey flow is not very appreciably on the decline.

Discarding queens early in the spring to which Mr. Carter refers is generally due to one or more of the following causes : (1) early disturbance to the bees, though not necessarily through premature opening of the hive, which is a fatal practice dear to anxious novices ; (2) the failure of the queen to respond to the call of her society, though not necessary disabled ; (3) the sickness or death of the queens. Exceptions nevertheless are met with.

Our experience in relation to **candy feeding** is discussed elsewhere.

The question of maintaining a regular and **favourable winter temperature** resolves itself in practice at present in adopting sufficient packing for conserving heat without hindering ventilation, and here the difficulty lies both in the selection of material and in regulating ventilation. So far as roof packing is concerned, unbleached calico as a first quilt is excellent, and above this, layers of carpet material which permits of ventilation through its meshes is probably superior in this respect to ordinary felt or the like. The **Insulator Hive*** which has been introduced specially for out-door wintering is an attempt at the conservation of the heat of the cluster from practically all directions.

Candy Feeding

Candy feeding, apart from its excellent suitability for the travelling of queens, is no more than an **emergency** diet for bees. It cannot be considered a safe food for bees to winter on, for the simple reason that it is an incomplete diet ; and we should always remember the possibility of lowering their stamina and of pre-disposing them to disease by offering them an artificial food deficient in **vitamines**, especially when it may be considered advisable to rob them of most of their pollen stores during the cold season in which they may be forced to endure long confinement.

It is generally believed, without any qualification, that bees eat their candy **before** they touch their sealed stores. Our experiments do not support this view. We have repeatedly satisfied ourselves that whenever the temperature is not less than 50°F. the bees will engage themselves in collecting water and dissolving the candy **for storing** in empty or partly filled cells, although some of them may enjoy its consumption under such conditions ; but whenever the temperature falls to 40° F. or below it, the bees generally desert their candy supply and cluster on the combs. In the first instance the bees are forced to consume later an unsealed improper liquid food, which is likely to ferment and to give rise to a form of disease presenting gross symptoms not unlike those met with in I.W.D. proper. This we have artificially produced on three occasions in the period between last October and March. The illness was surprisingly stopped in a few days when the candy was removed and the bees on the unsealed stores shaken off on empty combs. Incidentally one might mention that in spite of these manipulative winter disturbances at a temperature of about

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* **The Insulator Hive :** Literary brochure, Edited and Published by Messrs. James Lee & Son

55° F., the bees did not exhibit an exceptional ill temper, nor did they attempt to ball the queen on any occasion. In one instance the bees did not exhibit the slightest signs of ill health, as a result of candy feeding, in spite of the actual fermentation of part of the stores, but we noted that they took more hurried cleansing flights than others.

Combs of fermenting food were kept in reserve and given to other bees under favourable atmospheric conditions early in the spring, but failed to produce any apparent ill effects, the presumption being that prolonged confinement is a worse enemy to bees than bad food. It is essential to mention here, however, that the bees had other sealed and wholesome food; but the examination of the combs originally containing fermenting syrup left no doubt that the bees have either consumed it or added it to unsealed but good syrup. It is possible, though doubtful, that they have removed it from the hive.

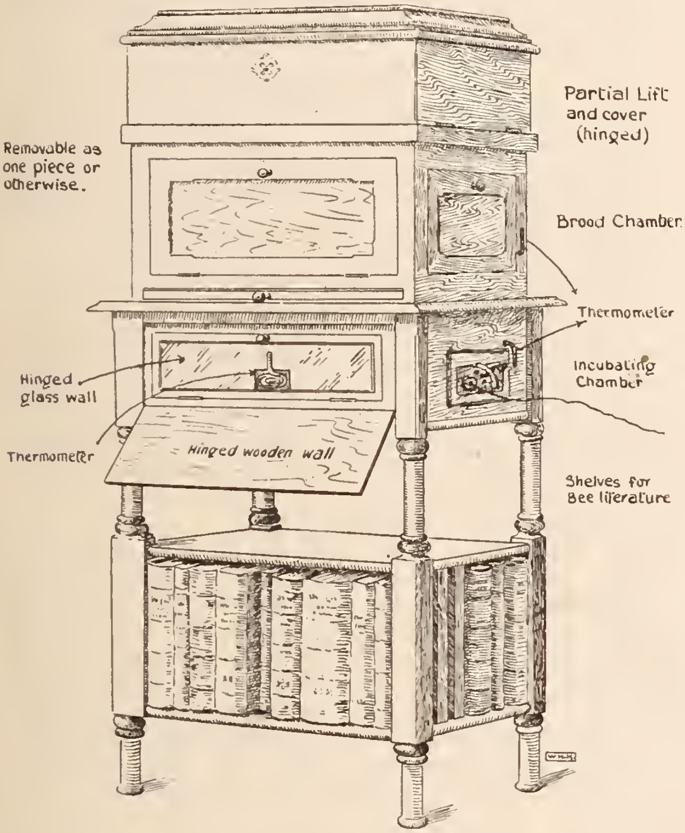
Partial Lift and cover (hinged)
Removable as one piece or otherwise.
Brood Chamber
Thermometer
Incubating Chamber
Hinged glass wall
Thermometer
Hinged wooden wall
Shelves for Bee literature

Fig. 1.

Abushâdy's Incubator Hive.

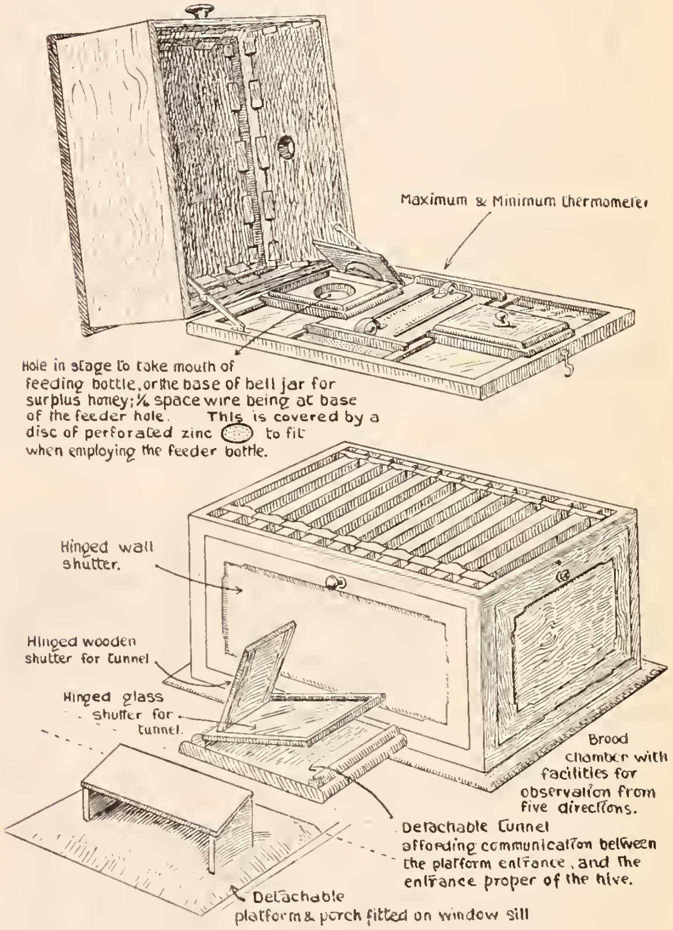
Maximum & Minimum thermometer
Hole in stage to take mouth of feeding bottle, or the base of bell jar for surplus honey; ¼ space wire being at base of the feeder hole. This is covered by a disc of perforated zinc to fit when employing the feeder bottle.
Hinged wall shutter.
Hinged wooden shutter for tunnel
Hinged glass shutter for tunnel.
Brood chamber with facilities for observation from five directions.
Detachable tunnel affording communication between the platform entrance, and the entrance proper of the hive.
Detachable platform & perch fitted on window sill

Fig. 2.

Abushâdy's Incubator Hive.

Employing an **Incubator Hive** as depicted in the accompanying descriptive illustrations (Figs. 1 and 2), one managed to safely keep a very weak nucleus surviving in good health in the coldest part of the winter, without disturbing their clustering except when taking cleansing flights. On the other hand, the use for no more than eighteen days of the same hive under equivalent conditions, but at irregular temperatures (instead of a steady one of 45° F., at which the bees appeared to enjoy semi-hibernation), only resulted in the production of symptoms not unlike those met with in I.W.D. proper, and similar to those experienced with candy feeding. When these disturbing factors were stopped, the trouble quickly disappeared. Simultaneously a comb with stores and about two hundred adherent bees were united without difficulty to a healthy colony, but no trouble ever resulted.

One or two or half a dozen experiments afford no conclusive evidence, but may offer suggestions and are sufficient to create doubts. And it appears, as mentioned before, that prolonged confinement of the bees, especially when induced to over-feed through irregular temperature, may be productive of such symptoms for which candy feeding in itself is **not** responsible, and it is difficult to imagine that good sugar candy, which proves on chemical analysis to be free of irritants or poisons, can be directly productive of fatalities to bees as has been recently suggested.

No one can dispute that many colonies winter safely on candy food **in addition** to sealed stores. In such cases it is highly probable that what is dissolved and stored of that candy is not left unconsumed for long, and will not get a chance to ferment. On the other hand, should the bees possess an excess of empty combs, they are sure not to miss the first opportunities presented to them for dissolving the candy and storing it without capping. This being theoretically medicated, but actually poor in its germicidal contents through faulty manufacture, as we have repeatedly discovered, is sure to ferment, if left for long unconsumed by the bees, in the shape of stored unsealed syrup. In addition, it aids in making the interior of the hive damp (through the evaporation of moisture) to the detriment of the bees. So therefore, from whatever aspect candy feeding in winter is considered, it deserves but full condemnation as a routine food, just as much as **syrup feeding in winter** deserves to be condemned ; but, no doubt, in certain cases of threatening starvation, one may be forced for a time to be thankful for the use of either.

During the summer, when rainy weather is prevalent, one sometimes finds a piece of candy very serviceable for a nucleus or a swarm temporarily accommodated in a travelling box hive, in the absence of a suitable feeding medium such as a Doolittle feeder.

The moral lesson of this is that every beekeeper should do his utmost in June and July to save as many honey combs as possible for the winter use of the bees, and for summer use in urgent cases of food shortage, as they have a greater claim before the beekeeper himself on their natural food : the most adapted diet to their healthy living.

Fresh Air And Disease.

It is difficult to correctly judge from ordinary practice alone the amount of oxygen consumption necessary for the healhty living of bees. Presumably it is not insignificant, although in winter it is sure to be much less than their demand during the active season.

Watching bees wintered in the **Incubator Observatory Hive** referred to above, one notes that the clustering bees are at first almost absolutely still. Then one notices the feeble pulsations of their abdomens. Should the rays of the January sun be permitted to penetrate the front glass wall of the hive, the bees will be found to gradually move in one mass towards it, and their respirations get stronger and quicker as they move. The amount of oxygen consumption is clearly in proportion to the rate and depth of the respiration, apart from the activity of the organism, and the nature of its tissues. In winter we have none other than the adult bees living, and all factors regulating oxygen consumption are brought down to a low minimum, which may be raised, of course, through undue exposure of the bees to severe atmospheric conditions, etc., that is, through the introduction of exceptional factors demanding unseasonably high food consumption, and consequently requiring comparatively much oxidation of both food and tissue, for the purpose of protective heat generation.

It follows therefore that it is hygienic to give the proper ventilation of the hive adequate attention at all times, but not to overdo it in winter, as the preservation of the heat of the cluster also is of the greatest importance, and it is not erroneous to diminish ventilation in winter to a reasonable limit for the sake of heat preservation. On the other hand, should there be any tendency for dampness in the hive or for the fermentation of the food, additional ventilation assumes a greater importance, as the question of fighting a predisposition to ill health will then present itself.

Selective Breeding.

The selective breeding of bees on scientific lines means in the first instance ignoring fancies and prejudices, and trusting only to actual tests. Only those strains of bees which exhibit marked activity in regard to foraging under all conditions —bad and good—claim first attention ; for after all, it is useless to champion a prolific strain of bees which are bad foragers. Secondly, it is necessary to give greater attention to the equal selection of both the maternal and paternal elements. To effect this, young selected drones should be given to nuclei which are waiting for the introduction of virgin queens, which may or may not be of the same origin. In spite of the logical supposition that a virgin queen will avoid the mating of a brother drone, it is quite likely that **"in-breeding"** is only avoided when the nucleus or the colony to which the virgin belongs is poor in its own drone population, or is enforced by drones from other colonies. The selection of the drones and their distribution should be carried out to this extent. Thirdly, it is worth remembering that bees which have proved capable of survival without special attention in infected, damp, and cold districts, may be credited with the quality of "hardness." On the other hand, degenerate bees may prove capable of survival under trying conditions if specially attended to. These should be discarded. Probably the majority of bee strains, pure and otherwise, will all deserve our full respect, if we were good enough to breed them properly.

Wax Building in Travelling Cage.

It is interesting to record the case of Italian bees with a queen imported from America building wax in their travelling cage whilst still remaining imprisoned in the latter, two days after bringing them in association with a colony, by the mere inversion of the cage over the frames, without making any alteration whatever in the former other than removing the address cover, nailed over the wire cloth. The bees previously spent in travel 22 days. No wax external to the cage was found.

Dr. Rennie's Researches.

In our Press review columns we have quoted from a communication to the April issue of the **SCOTTISH JOURNAL OF AGRICULTURE** on research work conducted by John Rennie, D.Sc., and Elsie J. Harvey, on Isle of Wight Disease in Hive Bees. The communication deserves more than our hurried examination at present and therefore we may possibly further examine it later. We would draw the attention of our readers to the original contribution above mentioned, for it fully merits their keen interest. With the exception of the investigation on the immunity of the queen and hereditary immunuty, the results recorded are hardly sufficient to provide any new data for progressive knowledge, inspite of some intelligent suggestions. We make this remark in appreciation of Dr. Rennie's efforts ; and, needless to mention, were it not for this appreciation, we would not have given so many lines of quotations and comments. As an illustration, take the following statement: " A hive population is continuously undergoing renewal by loss of older bees and the production of new bees. Recovery in a stock can be attained only by the failure of the disease to spread amongst the young as the older die out. The rate of spread varies in relation to factors at present unknown, and, as far as appearances go, is further obscured by the rate of production of new bees by the queen. When she is young and prolific she may far outstrip the losses from disease, and the colony may maintain itself so as to be profitable for the owner for a time. When new bees cease to be produced the disease gains upon the colony, and in this way the failure of stocks from the disease is more common in autumn and in winter than at other times." No serious attempt is made to find out these " unknown factors " and no new suggestions in relation to this point are offered.

Regarding the possibility of the existence of kindred troubles to I.W.D. proper, though differing in etiology, the following statement is made : " the ordinary symptoms...........are not specific to the conditions known as Isle of Wight disease, but appear to be usual when adult bees are incapacitated from various causes. Hence there are instances in which the bees of a stock may appear to be suffering from Isle of Wight disease and losses from crawling may continue for several days or even a longer period. But in such cases the non-infective nature of the trouble becomes apparent when the later produced bees are seen to be quite healthy." May sickness is given as an illustration. It is further mentioned that "in Isle of Wight disease in their experience there have been no recoveries of the sick bees nor of affected stocks, although the rate of progress has been very varied. The temporary sickness here referred to they have observed on a number of occasions, sometimes widespread in a district and affecting practically all the stocks. In such cases it would appear to be due to some disturbing factor in the nectar or pollen available at that time."

It is only too logical to assume that although overworked susceptible bees are quite likely to catch I.W. infection, and to seriously suffer from it even before the incidence of cold weather, yet, on the other hand, should those " unknown factors " regulating the incidence of the disease be incomplete, or should the factors regulating its spread (e.g., bad weather, the continuation of a source of infection, the defection of the queen, etc.) breakdown, there will be no reasons for dismissing the possibility of recovery in certain cases, just as there are no grounds for accepting the certainty of every strain of bees to yield to infection in the absence of suitable conditions. No doubt the pathological effects of infection may be such as to rended heavily infected bees unfit to survive, but it is equally feasible to assume that early infections may be aborted on the incidence of conditions favourable to recovery. A certain proportion of what is termed " May Sickness " may possibly belong to this category. And there are as many grounds for supporting this view as Dr. Rennie and his colleague have for dismissing it.

Brood Desertion

The popular view that bees never desert their brood is not correct in our experience, although such exceptions hardly count. Desertion may be on the part of the queen alone or with practically the whole of the bees. The occasional flight or attempt at flight of a virgin queen from a comb for mating, when a hive is opened, is a different matter.

An established queen may be forced to desert her progeny through nervousness, resulting from prolonged manipulation. This is specially met with amongst weak nuclei (e.g., " single-combed " nuclei) in spite of the non-employment of the smoker, and can only be prevented by the previous disabling use of a warm spray. Italian bees, as may be expected from their docility, are more subject to this occurrence, which in any case is fortunately not a common one. This on the part of the queen is nothing short of a suicide, for she may or may not return to her original home, and she may or may not succeed in establishing herself in another hive, but usually the apiarist and herself will be the sufferers.

The bees of a weak nucleus may finally desert their home and brood through either threatening or partial starvation, especially when due to a determined attack of robbery. On the other hand, bees somewhat advancing in starvation (but still capable of re- invigoration when fed) present " crawling " symptoms as wrongly attributed to I.W.D. alone. We have noted this at the Experimental Apiary of **The Apis Club.**

Original Contributions.

Honey Production & Swarm Control

By C. P. JARMAN. Editor, "Bee Craft."

The production of honey and control of swarming go hand in hand, and it is extremely difficult to just hit the happy medium between **over** and **under** manipulation during the honey flow. The main essentials are ample room for the queen, so that her ovipositing shall continue without hindrance, room ahead of actual requirements for necter gathering, and sufficient facilities for ventilation. The less the brood is disturbed the better, for there is no doubt that opening up the hive upsets nectar gathering to quite an appreciable extent.

No useful purpose would be served by considering the possibilities of methods which cannot be adopted with our standard frame, and 10 frame brood boxes, because until those who are engaged on research have given us the result of their labours, and a change is made, we must continue with what we have.

It must be clearly understood that to keep the greatest possible control of swarming, when the main interest is honey production, means giving your bees the very closest attention, and the necessary work must be done at the right time. Delays are fatal.

Very few of us have acquired that nicety of judgment that enables us to tell the exact moment when a stock on 10 frames will go up into a shallow frame super within half an hour of its having been given. I have hit this moment repeatedly and have usually known instinctively that I have done so, but I cannot do it regularly as some can. When this can be done, the conditions for honey production are perfect, and usually the swarming impulse is checked because the incentive to continue storing seems to have received the necessary stimulus. Under these conditions, a ten frame brood box appears to be sufficient, and I feel confident that with great care swarming can be kept within reasonable limits when the queen is confined to 10 frames, but I must admit that the nice judgment necessary is in many of us never acquired.

For the majority of bee keepers therefore some plan should be followed which allows the queen a greater ovipositing area.

(1) To place one comb of young brood with queen in a brood box with 9 frames of foundation or comb and put the 9 frames of brood, etc., and bees with one frame of foundation above queen excluder is an admirable course to pursue; it has been frequently described by American Bee papers under various names, but queen cells must be sought and destroyed in top brood box, and the plan must not be resorted to until the hive is full of bees, or the increased area will be kept at the requisite temperature at a great sacrifice of energy by the bees, and owing to the necessity of keeping the brood warm, insufficient bees will remain below with the queen for the continuation of egg laying, which will cease until more bees have hatched out, sometimes for more than a week at a time when every egg is of importance. When this method is adopted, frames as sealed can be extracted and replaced, and usually no more room need be given.

(2) To allow a queen access to 20 standard frames is not in itself a guarantee against swarming; and unless the queen is a prolific one, so that supers can be placed above, is sometimes a method which causes disappointment, by the queen not consistently keeping where you want her to, but wandering all over the hive. The method should only be used with a queen known to be of an extra prolific strain, and by a beekeeper with a good deal of experience. Manipulating a colony of this description is much more difficult than when it is known for certain in which brood box the queen is.

(3) Giving more room by opening the brood chamber at intervals, taking out a full comb or two and inserting empty ones, will frequently keep bees and queen too busily occupied to think of swarming, but most beekeepers will not take this trouble, and as above mentioned nectar gathering is materially affected. Also with this method, it is necessary to have some weak stocks or some supered with standard frames, so as to be able to dispose of the combs taken from the brood chamber.

A plan which I have adopted with quite satisfactory results is to super the first stock which is ready with a crate of 10 shallow frames with brood foundation, and no queen excluder. The queen will invariably breed in there, and as the shallow frame supers are put on the other hives, a frame or two of shallow frame brood is put in the centre to draw the bees up through the excluder at once.

The best results are not obtained by treating each colony as a separate entity, but by treating the apiary as a honey producing outfit. Forcing some stocks up to concert pitch at the expense of others by robbing the weak colony to make the strong stronger and uniting the weak when this building up is no longer required.

I have never united very early in the season because a stock too weak to exist is hardly worth troubling about, and if a colony is strong enough to earn through the spring. I have secured excellent results by uniting in May.

One does not necessarily get the best results by experimenting, but more is learned and greater interest is taken, when all methods are tried. This season I have treated one stock as (1), one stock as (2) by placing the brood box over another with drawn-out combs. I have united two stocks, each well covering eight frames, by putting one lot on top of the other with a sheet of paper between and I have supered four stocks with shallow frames over excluder and in two instances, out of the four, the bees took to supers immediately. At the time of writing (May 30th) other stocks are not supered.

I have carefully avoided any suggestions in regard to sections because I feel that in my own case prevention of swarming is rather due to luck than judgment, but I never use a queen excluder and have been very fortunate in that I have had but a small proportion spoiled with brood.

Isle of Wight Disease and Dutch Bees

By RICHARD WHYTE,
Cumbernauld, Dumbartonshire

Since the dawn of modern Apiculture there has not been a time when there was such a dearth of bees in Britain. From Cornwall to Caithness the same sad tale is told of apiaries having been wiped out of existence by I.W. disease. Whole districts, almost counties, being swept clear of bees by this scourge.

Knowing absolutely nothing as to the etiology or causation of this disease, we have little understanding of its nature. Drugs of many kinds have been tried and found useless. Breeding for immunity has been tried with better results. Various races have been experimented with and this has proved the most fruitful field yet tried. Personally

I have tried many varieties of bees with varying results. Italian queens from two districts in Italy I found did not prove resistant; American-Italians I found to be better bees in many ways than those from Italy. This, I think, because of the cross of German blood in these American-Italians and also because of the careful way the American breeders have of breeding queens from proved stock. But for resisting this disease they were not equal. A more resistant bee than the Italian I found in the "Punic"; these bees are bred by John Hewitt, of Sheffield, from Pure Tunisian stock. They are a splendid race with some marked peculiarities. My friend, C. B. Bartlett, of Witney, when badly stricken by I.W. tried these Punics very extensively. The year before last he started the season with 45 stocks and from Virgins supplied by Mr. Hewitt, he increased during the season to 450 and harvesting 2½ tons of honey. All this increase being accomplished without using an ounce of sugar. If only these Punics could stand up against I.W.! With regard to our native bee, what? I am afraid there are no pure bred native bees in this country. Outside of a score or so of individuals whom I could name, there is no business in beekeeping in the British Isles. As an insignificant side-line, and as an interesting hobby, there are many thousands of individuals who keep bees, or who **did** keep them. These persons were often attracted, say, by the prettiness of Ligurians or the gentleness of Carniolans to try these amongst their two or three stocks, with the result that there has been an awful mix up of good, bad and indifferent blood. Another thing, our methods of instruction in this country have been against the upkeep of a strong virile race, every poor little lot being saved where possible, with the result that this country is, or **was**, peopled largely with a degenerate, weedy race that could not stand up against a virulent disease such as I.W.

If Beekeeping had been conducted in this country as it has been in America by keen business men, who make a livelihood out of it, and as a business proposition watch keenly the progeny of their Queens as to their honey-getting propensities, our race of bees would have developed on better lines. Bees have been too long regarded merely as bees, without regard to their qualities, by most people who kept them in this country. The progressive Beekeeper should be continually on the lookout for desirable traits in his bees and that his increase is obtained from superior stock.

When first I was attacked by I.W. I was advised to try, amongst others, Dutch Bees. I did so, but was not greatly impressed with the result. I wrote in a contemporary bee paper in a rather derogatory manner as to the claim of these bees to resist this disease, when a friend enquired as to where I had obtained my stocks. It then turned out that the bees I had tried were really **third cross** Dutch Bees. I then tried two years running some 10 stocks each year of pure imported Dutch bees. Both of these years I came out each Spring without any losses. This year all my **other lots** went under. With me it was a question of testing them in an I.W. environment. A test as to resistance against disease would not be conclusive unless in a apiary or a district where I.W. did exist. I have compared results with others, notably with that obtained at the Apiary of the West of Scotland Agricultural College, where they wintered over 80 Dutch Stocks, and the result is the same, not a trace of I.W. to be found. Of course, in all these tests decent hygienic conditions were observed as to clean hives, etc.

As to this Dutch Bee. Is it a race apart that can be labelled by the generic term "Dutch"? No, I don't think it is. My own opinion is that it is simply what has been known in Central Europe as the German bee. Dutch beekeeping is, however, conducted on very conservative lines, with little, if any, intermixture of foreign blood. Also their bees are bred and swarmed, almost entirely, from that most hygienic receptacle for bees, the skep. This said skep being quite twice the size of those used in this country.

It is known that what we term I.W. disease existed very many years ago both in Germany and Holland. It may interest readers of THE BEE WORLD to know that I had staying with me a few weeks ago Mr. Hans Matthes—the Saul amongst Dutch Beemen—and amongst other matters of interest he assured me that there was no sign or symptom of this trouble anywhere in Holland now. May it not be a case largely of immunity with them, or, if they do take it, of being able to cast it off? In any case I am very well pleased with them.

Like most prolific races they are somewhat prone to swarm, but this trait according to Vogel, gets eliminated in a few generations, if not encouraged, shewing that this habit is an acquired one engendered by the system of beekeeping in vogue in Holland. Adverse climatic conditions of life result in the persistence either in humans or bees of a hardy race. The climatic conditions in low lying Holland are not ideal for bees. Dampness and fog prevail very much. It is quite reasonable to suppose that the bee that persists under these conditions must be one with a strong constitution.

Have I not said enough at this time? On another occasion, perhaps, if you, Mr. Editor, pass this on, I will return and discourse on other matters concerning bees.

Wintering Bees.

By H. E. C. CARTER, Blackheath, London.

The successful wintering of bees should be a subject of great interest to all beekeepers, but unfortunately it is generally accepted by the majority that a certain loss is inevitable, and all calculations being based on a percentage loss. This applies to America quite as much as this country.

It may not be possible to prevent all loss in wintering, but it is certain that considerably more care could be exercised; no stock should die from starvation.

The preparation of stocks for wintering should commence in June, and if carefully carried out would go a long way to lessen the heavy losses that at present we hear of each spring.

All stocks should be carefully examined in June and any not up to average re-queened as soon as possible. There is one important point which may here be mentioned ; a colony which is slack in sealing stores is not in good condition and is best re-queened. The point is important as in practice it is found that such a colony will often attempt to winter on unsealed stores, which is fatal.

In all cases re-queen before August ; It may be necessary sometimes to re-queen later to save a weak stock, but the risk is great.

Under natural conditions queens are raised during a honey flow, and introduction is nearly always successful under such conditions.

When done at this time it follows that, the whole of the wintering bees are the progeny of the presiding mother, whereas later re-queening means that the bees which go into winter quarters are not all one family. This may possibly be the reason for finding late introduced queens sometimes thrown out in early spring; the writer had a case in his own apiary and could not account for it in any other way.

Brood raising should not be forced too late in autumn, once the bees prepare for winter do not stimulate. Autumn feeding should be rapid with a view to storing for winter and spring use.

The consumption of stores is often misunderstood. The greatest inroads are made in spring when brood is being raised. Candy is only suitable for adult bees, thus it is found that candy is often consumed in winter while the liquid stores are untouched till brood rearing commences.

The question of maintaining an equable temperature by packing or otherwise has been fully dealt with by Dr. Abushâdy, who will perhaps favour us with his views on the above notes.

The Press Mirror.

The British Bee Journal

SEASONABLE HINTS.

We are afraid the prolonged drought will have checked the growth of flowers, and also the flow of nectar in those that are in bloom. Up to the present there is very little clover or sainfoin in bloom, but it is quite likely that when the rain does come there will be a number of plants in bloom, and honey will be stored rapidly. Plenty of super room must then be available or the bees will swarm. Charlock appears to be the principal source of nectar just now. As Mr. Kettle points out in his " yarn," this week, the honey from this plant has the quality of granulating very quickly, in fact we have seen it granulated in the comb before it was sealed over. On this account it is not good for section honey, and it will be well to use only shallow combs until clover is in bloom, and also to extract the honey as soon as it is sealed over. The cappings from charlock honey are a pale yellow, the honey being very light in colour. If sections only are used, and no extractor is available, they should be taken off and marketed as soon as possible.

The weather is all that can be desired for the mating of young queens, and the making of nuclei, for increase of stock, or queen rearing, should be proceeded with as fast as possible. It may be necessary to give nuclei a little syrup in those districts where there is not much forage.

Some of our correspondents have difficulty in finding the queen, and have asked where to look for her. Judging from their queries, some beginners appear to have an idea that the queen may be found in some particular portion of the hive, surrounded by a number of " ladies-in-waiting " as depicted in old drawings. There is no accounting for where the queen may be, especially when the bees have been disturbed by smoke, and finding her is a matter of practice. When searching for her use as little smoke, or other subjugator, as possible. If too much is used, bees and queen are sent scurrying all over the combs, and the queen herself may take refuge in the most unlikely place, or will hurry back and forth on the floor or side of the hive, to the utter discomfiture of her would-be captor. When handling bees they should always be treated gently, and this in more necessary when finding the queen than at any other time. Take out one or two combs if possible, making certain the queen is not on them. This gives room to move the rest of the combs gently, and leaves a space between those examined and the others, thus reducing the chance of the queen running back unobserved. Search each comb carefully both sides, and the edges, and when examining be careful to keep the comb over the hive. Queens are apt to drop off the comb ; should they do so it is better they should drop inside the hive rather than under one's feet ; also notice if there are eggs in some of the cells. If the queen is not found the first time, work the comb back again, and so far as possible keep an eye on the space between the combs. If she is not then found, and eggs in the cells show there is one, place the combs in pairs with a space between each pair, down which light can penetrate, and leave them so for a few minutes. As the queen when in the hive prefers darkness rather than light, she will probably make her way between one of the pairs of combs, where she may be found.

At this time of year it is just possible that a swarm may have issued a little time before the hive is examined, and unknown to the beekeeper. In that case there will be eggs in the comb, but the presence of queen cells, from one or more of which the young queens will be on the point of emerging, and the reduction in the number of bees, will give the clue to what has happened. If a queen cell is found open at the point, look for a virgin queen.

The Beekeepers' Record.

WORK FOR THE MONTH.

In most localities bees are doing well. Many stocks are storing honey in supers, and there is at the moment every prospect of a bountiful honey harvest. There is a profusion of fruit bloom, and where this is depended upon for surplus, bees will be storing rapidly. Some beekeepers have already secured some surplus honey. Those who have taken the advice given in this column early in the year and fitted up sections and frames and made other timely preparations will now be able to reap the benefit of their forethought.

In order to check swarming a comb containing brood that is just on the point of emerging from the cells may be taken from the strong stocks that are likely to swarm and given to those that need building up, their place being taken by new frames fitted with foundation. There will now be no danger of chilling the brood (as mentioned last month) if the new frame is placed in the centre of the brood-nest. I know of no surer method of preventing swarming than removing a frame or two of brood and replacing with foundation in this way, and at the same time giving more room above the brood-box by adding another " super."

Where increase of stocks is desired those that are strong enough should be divided, or artificial swarms made during this month, but do not expect to both increase the number of stocks in this manner and also get a large quantity of honey.

If a stock swarms the best plan is to remove the parent to a new stand and fix the new hive and swarm in its place. Should the parent stock have supers on these should be taken off and placed on the swarm. Under favourable circumstances this increase may be accompanied by a moderate take of honey, especially if the swarm is early.

If increase is not desired the swarm may be sold or returned to the hive.

If a swarm is returned it is a good plan before doing so to take a nucleus from the parent stock, with one comb containing brood and a well-developed queen cell, and two other combs with food. All other queen cells should be destroyed, the hives filled up with three frames of foundation or empty comb, an extra super placed on the hive, and the sawrm returned in the evening. Later on in the season the young queen in the nucleus may be used to re-queen the parent stock.

In order to take full advantage of the honey flow supers should be given in good time. When the first one is about three-parts full, and the centre combs are being sealed over, another should be placed under it; others may be added as required.

Queen rearing should now go ahead, as queens reared at the natural swarming season are superior to those reared at any other time.

When a swarm is hived on new frames of foundation, or empty comb, feed it for a week; a pound of sugar, or candy, made into syrup with about ¾ pint of water will be sufficient for a week. Should the weather turn wet or cold so that bees are unable to forage, continue the feeding until conditions are more favourable. If the swarm has come from a distance place it in a cool place until evening, and then hive it. If the bees have been confined for 24 hours or more, it is well to give them about ¼ pint of syrup before liberating them. It may be given through the perforated zinc by means of a bottle feeder, or a few spoonsful may be poured on the zinc 10 or 15 minutes before hiving. The bees will then be better-tempered, and the beekeeper more comfortable during the operation.—J. H. H.

The Beekeepers' Gazette

A RE-STOCKING SCHEME.

In the June issue of THE BEEKEEPERS' GAZETTE, Mr. C. B. Bartlett, of Witney, Oxon, outlines in an interesting contribution a re-stocking scheme in the following words:—

"For some time past Capt. Cuthbert and I have been urging the Board of Agriculture to adopt a plan for the regeneration of bee life in this country. All are agreed that something must be done. The prevalence of disease has reduced the bees in the country to a mere handful; and beekeeping, under present conditions, is not a practicable undertaking. Even if the bees in any district prosper for a year or two sooner or later the inevitable happens—the bees die and all chance of pleasure and profit disappears. The Board of Agriculture has adopted a plan for buying bees in Holland, where disease is undoubtedly present, although not in so serious a degree as it is here. They propose to bring these bees to a centre in this country where disease is positively rampant; and from thence to dispatch them all over the country. The bees are to be headed by queens from Italy. And it is by no means certain that Italy is free from trouble— the fact is otherwise.

Now, if not already infected by disease, those bees will have inevitably been exposed to very serious risk of infection before they are sent out; and it is our opinoin that outbreaks of disease may be expected in some of the places to which they are sent. In any case, wherever they go they will be liable to become diseased and to form fresh fuel for the flames. Is it not certain that this ill-conceived scheme can, at best, only result in a temporary palliation, and can never be a cure for our troubles. ?

Quite possibly it may only help to keep disease alive by renewing material for it to work upon.

Now, sir, the plan my friend and I are advocating is free from these drawbacks. At present we have healthy bees in complete isolation on the islands round our coast, and on the mainland we have disease almost everywhere—risk of disease is everywhere. We propose to proceed by easy stages to a complete reversal of this condition of things, and to have absolutely sound bees all over the mainland and research work on disease systematically going on in the islands. Then we may hope to be in a position to deal drastically and effectively with a fresh outbreak of disease if and when it comes.

When Pasteur was commissioned by the French Government to inquire into the disease of Pibrine among silkworms (a disease closely allied to that now called "Isle of Wight disease" among bees) he found that all sorts of "cures" had been advocated, but that none was effective. The only way the silkworm people could carry on was by continually importing fresh seed from the districts ever further afield. After exhaustive inquiry his conclusion was that the one chance of preserving the industry was to breed only from healthy stock—from moths which, after laying, were examined under the microscope and found entirely free from disease. This plan was adopted and the industry was saved. Does it not seem reasonable to think that the adoption of a similar course with bees would lead to most beneficial results? Do not all others try to breed from sound stock rather than to "cure" diseased animals and breed from them? Here, in Oxfordshire, during the past six years, we have bred bees from the best partially immune and resistant survivors of the plague. We have used every possible care and precaution. We have introduced many thousands of queens of various foreign races. We have tried many and various crosses. But the result is not satisfactory! We have lost over 6,000 stocks of bees and much time and money. I do not suggest that experiments on such a scale have no value; quite the contrary; but I do say that we are now absolutely convinced that our hope lies, first, in breeding bees for re-stocking in complete isolation, and next, in re-stocking any given district only after it has been entirely cleared of every trace of bees.

We are asking the Board of Agriculture to commission us to take this bee business in hand. We want to grapple with it thoroughly on sane, sound lines and establish the beekeeping industry on a firm basis. We should begin by making breeding depots on the islands. For instance, in the Scillies we have stocks of the old British bees which are perfectly healthy and have never been weakened and enervated by any disease. Major Dorrien Smith, the owner, is most anxious to co-operate in the work, and the climate of the islands is pre-eminently suitable. Nuclei for re-stocking could be produced two months earlier than in Oxfordshire. In the autumn, we propose to visit such practically isolated areas as the Isle of Wight, Anglesea, Cornwall, and also the Isle of Man. We should call meetings of all interested in bees and lay our plans before them. We should get them to help us in destroying absolutely every bee in those areas and in thoroughly disinfecting every hive and receptacle used for bees. In the spring, we would furnish every beekeeper with early nuclei from our island depots to replace the destroyed lots. We do not fear any objection from the owners, because the value of the honey in the hives in the autumn would be considerably greater than the value of the chance of the stocks' survival until spring. Probably the chances are more than 4 to 1 against survival. Well, the amazing yield in bees and honey from these sound nuclei, placed in cleared areas, would prove an astounding object lesson. After it, we feel sure that beekeepers on the mainland would be more than ready to welcome the drastic measures we should propose for their benefit.

It may be as well here to lay great stress on the fact that, in breeding our queens, we should proceed on sound lines, for the production of vigorous queens is the surety of profitable beekeeping. Bees bred as the notorious leaflet (No. 48) recently issued by the Board of Agriculture advises, can only result in a ruined race of devitalised creatures fit only for the spread and propagation of disease.

In this kingdom the annual waste of ungathered honey alone would amount to more than £5,000,000. And all authorities are aware that the indirect value of bees to the community is much greater. Yet we are told that although the Board of Agriculture appreciates the value of our suggestions, and is most favourably disposed to them and to us, nothing can be done! The President says that he has no funds for the work, and his officials say that none can be obtained. Though millions can be poured out for unproductive work, the insignificant sum we should need is withheld. We are advised to do the work as a private venture; as if, in the nature of things, we could undertake the work without authority from the Board! I have no doubt that the breeding depots would prove extremely lucrative, for the sale of sound bees would be almost unlimited, and would entirely destroy the trade in doubtful, or diseased bees that now goes on. But, unless we had power to clear districts before we restocked them, the good results would only be temporary.

I have not touched upon the many less obvious, but most valuable, results that will come from the scientific rearing of bees in isolation. Races can be kept pure, strains of special value given prominence. Experiment would definitely show which is the best race, or strain, for any given locality. At present nothing very definite is known. So much of what is accepted as knowledge is mere theory or conjecture, or the unsupported statement of people interested in the sale of the various races. I am very sure that the scientific people, who want to learn about bees and their diseases, will welcome the adoption of our plans.

Then we shall at last learn something of the causes and cures of the various diseases—or at any rate we may hope to learn how to prevent them. Few indeed, outside a very small circle are aware how abyssmal the present ignorance is. Well, sir, I have given you this outline of our plans. Can you, or can any of your readers, help us to get them put into operation?"

We have given full prominence to Mr. Bartlett's article in view of the importance of the subject of his contribution apart from his experience. The fact remains, however, that with the exception of his concluding statement his scheme is based on no correct data, as we shall explain; but let us remark at once that should the authorities believe in his views, there is no excuse whatever for them in witholding their assistance. The experiment is worth a trial, on a small scale, at least from an educational point of view, but the defects of the proposal as a wholesale plan are so obvious that we are indeed surprised of the attention given it by Mr. Bartlett.

Referring first to the Government Scheme, it is clear that they have imported none other than pure selected stocks of Dutch bees, the merits of which are discussed elsewhere in this issue of THE BEE WORLD by Mr. Richard Whyte. Unless the Government officials have neglected the careful examination of colonies before importation, with the view of excluding **Nosema "carriers,"** we fail to see that any blunder has been committed by the importation of such a highly prolific strain of bees for restocking purposes. Then again, the importation of selected Italian queens from reputed breeders cannot be calculated as other than a wise practical policy. We do not believe in the supremacy of Italians alone, but we believe in the excellence of most strains when scientifically and properly bred. Italian bees do possess, however, excellent features, and their selection is decidedly a gain, irrespective of differences of opinion.

Granting that central County apiaries are established in districts which are not disease-free (and it is almost certain that no disease-free districts exist in Great Britain) it is clear that, provided good strains alone are stocked, and provided that no colony is transferred from one district to the other before it is carefully examined, for the purpose of excluding "carriers," no harm is likely to arise from such a procedure of transfer. **The most careful supervision of such re-stocking apiaries is, however, necessary.**

Nuclei bred in such apiaries are **not** liable to become diseased and to form fresh fuel for the flame as Mr. Bartlett contends. Certainly not, unless from the beginning they were composed of degenerate bees, improperly bred, which we understand is far from being the case. The only danger which is likely to arise from them lies in the possibility of their "carrying" disease and of infecting susceptible weak strains in other districts; and in this danger share all stocks transferred from one district to others, unless carefully examined before hand. The elimination of susceptible strains through the means of infected "carriers" is no excuse for spreading infection or for excusing the practice. The elimination of the unfit and of infection should be conducted on two lines: (a) scientific breeding, and (b) regular hygienic management. **Both** factors are indispensable. Watchful control of the breeding apiaries must therefore be constant. **No bees should be dispatched prior to the issue of a certificate of healthiness after repeated and conclusive examination.** This is quite practical, and the labour which it entails is perfectly justified.

As for the surprising suggestion that such a pandemic disease as **Nosema Infection** has no existence in certain Islands, especially when the disease appears to occur also in wasps and bumble bees, or for the suggestion that if all bees present in infected areas were extinguished all sources of infection will be reduced to other than a minimum (which will be sure to develop into a maximum as soon as suitable susceptible bees declare their existence) it will suffice to remark that the surest way for creating susceptible strains is by entirely avoiding infected surroundings, although scientific breeding will more or less counteract this tendency. With the precautions already mentioned, we would personally prefer "non-carrier" bees that have proved capable of survival in infected districts, especially if bred from reputed strains, to those originating in disease-free districts; and the reason for this preference is clear.

It is doubtful that the erroneous queen-rearing suggestion given by the Government Food Production Department is other than a slip of an over-worked official. We do not care therefore to make capital criticism out of that; but would venture to suggest that so long as an originally good colony is permitted by its owner to become overworked and to degenerate through successive in-breeding inspired by his false economy or ignorance, and so long as unhygienic management is the order of the day, it is doubtful that any single measure, however great, will bring I.W. Disease to a standstill.

Bee Craft

THE GOVERNMENT AND BEES.

The most progressive beekeepers in the Country have for years past been using their influence for the purpose of urging the government to pass legislation for and take an interest in Bees. The beginning was made by the issue of a few pamphlets to which we have already alluded; further practical evidence that this interest has been aroused is shown by the Food Production Department undertaking the inauguration of a re-stocking scheme.

The Dutch bees in skeps, for the purpose, have already arrived in this Country, and the prolificness of the queens will ensure plenty of young bees for making nuclei to be headed by Italian queens.

The general consensus of opinoin appears to be that the pure Dutch bees are very little less resistant to disease than our own native black bee, and their propensity for swarming also makes them undesirable, but it is evident that to import from Holland stocks of prolific bees is a much more practical and economical scheme than importing colonies from Italy, when queens for introduction to nuclei can be so much more readily shipped.

To have depended upon home-bred bees for the nuclei would have been a much slower method of re-stocking. The high price of bees is inducement enough for all who have stocks to increase as much as their experience and available time will allow.

The introduction of these skeps will probably result in some Dutch blood being introduced into apiaries adjacent to those where the nuclei forming is taking place, through the drones mating with young queens of swarmed stocks. No doubt every precaution will be taken to keep down drone breeding, but to keep them out of existence entirely is not possible and little harm is likely to result as compared with the benefit derived from the wholesale introduction of Italian blood into the country.

It would be futile for the Government to introduce all these bees into the country, and so encourage the development of beekeeping, and then leave them to the same risks that beekeepers have had to fight against, unassisted, for the last few years. The Government, by undertaking this re-stocking scheme, have placed themselves under a moral obligation to pass legislation for the protection of the stocks produced by their scheme, and those beekeepers who keep their apiaries under proper hygienic conditions will get the necessary protection from those people who keep them carelessly, untidily, and without any regard for the obligations they owe to their bees and neighbouring beekeepers.

There is no bill actually in existence at present for introduction to Parliament, but those in whose hands the task of drafting will be placed will be representative of all beekeepers and the interests of no particular section will be either neglected or given undue preference.

We shall find that those fears which some people appear to have of interfering inspectors and arbitrary inconveniences are absolutely groundless.

The whole position is really in the hands of the beekeepers themselves, as by well-organized County Associations working in conjunction with each other through a well-organized head-quarters a power of enforcing government action and dictating the line of action would rest, as with trade unions. The power of co-operation has recently been placed too evidently before us to need emphasising.

Gleanings in Bee Culture

STRAY STRAWS.

By Dr. C. C. Miller.

A good deal is said about what a queen can do in the way of laying eggs, and it may be of interest to figure out just how many eggs she actually does average daily when she has occupied a certain number of combs. If she fills three-fourths of the available cells in a Langstroth comb, counting both sides, she will occupy 7,300 cells. If it is 21 days from the time an egg is laid until the young worker emerges from its cell, then she has laid 7,300 eggs in 21 days. Dividing 7,300 by 21 gives 347.619 as the average day's work during the 21 days. Of course she has not laid that number of eggs each day. Some days she has laid more; some days less; and there is likely to be a wide range from the minimum to the maximum.

Taking that 347.619 as a basis, and relieving the queen of the difficulty of laying less than a whole egg at a time by throwing away the fractions, we may make out a table showing just what a queen actually has averaged daily when she has filled a certain number of combs. It will be : For 1 comb, 347 ; for 2 combs, 695 ; for 3 combs, 1,043 ; for 4 combs, 1,390 ; for 5 combs, 1,738 ; for 6 combs, 2,086 ; for 7 combs, 2,433 ; for 8 combs, 2,781 ; for 9 combs, 3,128 ; for 10 combs, 3,476 ; for 11 combs, 3,824 ; for 12 combs, 4,172.

Dr. E. F. Phillips thinks a good queen ought to fill 10 combs. That would call for a daily stunt of 3,476 eggs, some laying. Perhaps some of us have hardly realized what a good queen ought to do. At any rate I should hardly want to call any man a slacker whose queens should average 2,000 eggs daily, keeping 6 combs filled.

Some one may say that when a queen occupies 10 combs the outside combs are not half-filled. True enough ; yet these are more than balanced by inside combs more than three-fourths filled. I've seen plenty of combs that I think were nine-tenths filled. Yet I don't guarantee that " three-fourths " as anything more than a rough guess, and it will be a useful thing if some one makes accurate observations showing just what a good queen does. Then I'll gladly re-adjust my figures to fit the facts. I have merely shown what a queen actually does average if she fills a certain number of frames three-fourths full.

The American Bee Journal.

MATING QUEENS OVER COLONIES.

Referring to the article on page 57, February number, "Mating Queens Over Colonies," I wish to say that I have had as good success mating queens over colonies as with some of the other methods. It is possible that it was due to good luck and awkwardness, rather than to the method used.

As a beginner, I have produced some excellent queens by various methods, and when ready to place virgin or ripe queen-cells over a colony I paid no particular attention to putting up frames from the lower brood-chamber, but put up frames containing brood in every stage of development.

In choosing and preparing my hive for mating purposes, I select a strong colony, having one or more section supers, in which the bees have commenced to work. On top of these I place a honey-board, on top of this I place what I call a " mating bottom," which is made in the following manner : Make a frame to fit the hive, dimensions of which are 1¼ × ⅞ inch. On the bottom of this frame I tack a sheet of tin, covering three-fourths of the frame ; bore two or three half-inch holes in the back end of the frame, and for the entrance tack a piece of tin bent at right angles below these holes for alighting board. Over this put your brood-chamber with the brood frames and virgin or ripe queen-cell and in due time you will find a laying queen.

I have mated two queens in the same brood-chamber in this way and would also get the frames filled with honey, which was extracted, or could have made a new colony strong enough to winter well.

I would like to mention another experiment which I have tried. The idea is not original with me, but I have never seen it in print that I remember of. I have seen the time when I wanted to graft some queen-cells and had no royal jelly. I have used a mixture of water and honey, well mixed, used the same as royal jelly and had 87 6–10 per cent of the cells accepted and 85 per cent were finished and were as well developed queens as I ever saw.

I have been in the bee business since 1918, but have done nothing but try experiments, and try to do what the other fellow has done, and more.

L. A. SHAWLER,
West Union, Ill.

The Western Honey Bee

DISEASE AND ALUMINUM COMBS.

The only question I can see is that about disease. We do not claim that disease will not reappear in the aluminum comb. I can see no reason why it will not appear in the aluminum the same as it will in wax combs. The only difference is that the beekeeper, if he cares to go to the trouble, can sterilize his honey by boiling and feed it to the bees shaken upon aluminum combs. They will store his honey in the cells of the aluminum comb and then he is sure that any honey fed to his brood is pure honey. This is the treatment we advocate. Beekeepers, however, have had some rather novel experiences in the treatment of foul-brood. Mr.————sent me a photograph, on the back of which he stated :

> " Aluminum honeycomb—15 days after this colony was shaken (American foul-brood) on to aluminum, it had filled the hive with brood and honey from end to end. Three months later the colony was entirely healthy."

You will notice that Mr. Severin states disease did not reappear. Mr. I. F. Bechtel, president of the Nevada Bee & Honey Company, stated that he shook only one colony of American foul-brood on to aluminum honeycombs and that up to the time he talked to me, which was about six months afterwards, the disease had not reappeared. He said that he had no argument to advance as to why it did not reappear, but thought there was a possibility that with the aluminum comb the bees could keep the cells well cleaned out and in this way completely remove the germs themselves.

If possible, I would like to have some experience given as to the method of treating foul-brood. We do not wish the beekeepers to think we are making claims which cannot be substantiated. Some of the beekeepers have gained the impression that we advocate shaking the bees directly on to the aluminum comb before they have had an opportunity to digest any diseased honey they may have in their honey-stomach. You of course realize that the bees should be shaken on the aluminum comb just the same as they are on any other comb, that is to say, put them in a clean hive with, say, one aluminum comb and let them either digest or deposit in this comb any diseased honey ; then take this comb away from them and give them fresh aluminum combs, and the treatment should be eminently satisfactory. In the event that the disease does reappear, the beekeeper then has a quick remedy for treatment ; that is, he may remove the combs, sterilize them properly and return them to the bees. —S. A. R.

The Canadian Horticulturist & Beekeeper.

MAKING AN INCREASE. A CHEAP AND EASY WAY.

By Fred Statton, Mitchell, Ont.

The following method of making an increase which I am about to relate will, I know, be frowned upon by the more experienced and up-to-date beekeepers on account of its introducing a swarming strain of bees which, of course, is contrary to the method repeatedly advocated in recent years. However, the method is one that I have proved to my satisfaction, and is passed on for the benefit of some beginner with bees who desires to make an increase.

Those of you who practice clipping queens every year will have no trouble in moving the hive body filled with brood from the old stands when the first, or prime swarm emerges. This will have the old queen, which should be clipped. Usually I find the queen crawling in the grass, and use a small cage for caging her majesty. When this is done the hive is taken off its stand and a hive body containing comb or wired sheets of foundation put in its place. Remove the supers to the new hive body on the old stand. When the swarm commences to come back to the old stand release the queen, so as to allow her to enter the hive with the bees. After everything is quiet around the hive take and place the hive containing the brood beside the old stand on which the new hive sits, making sure the entrances of both hives are on the same level and not closer than four inches.

After twenty-four hours move the hive containing the brood to a permanent stand a good distance from the old one. If this hive has nine frames of brood equally divide in three parts, making sure each part has one or more queen cells. Take two hive bodies, thus making three hives, and place three frames of brood in each. Go to a super, take out three frames of new uncapped honey, and place one in each of the hives. Set these frames on permanent stands a considerable distance apart. This will give you three virgin colonies from this one hive of brood, and four counting the swarm. After two weeks fill the three hives with empty combs. By dividing the brood in this way I avoid after-swarms known as second and third swarms. The hive I use is the eight frame Langstroth, and in this way I make two colonies out of six frames of brood, with splendid success. I do not recommend dividing the brood before June 15 or after July 15. If left too late the brood will not develop before the honey flow ends, and will consequently have to be fed for winter, which will leave the colony in a weakened condition to go into winter quarters.

The Australasian Beekeeper

AUSTRALIAN HONEY IN BRITAIN.

An Australian soldier, writing from England to the " Land ," Sydney, under date October 30th, makes a serious complaint :—

" Whilst staying in a town in the northwest counties of England I saw in a shop some small brown earthenware jars labelled " Pure Australian Honey." Anxious to test its quality and being keenly interested in Australian goods in England and other countries, I went in and enquired the price. Two shillings and ninepence a pound jar I was told. I bought one and took it to where I was staying. Judge of my surprise when on emptying the jar it seemed to be of unusual weight, so I took it and weighed it and found it weighed half a pound—to be precise 8½ ozs. No one objects to the price, as California is 2/6 a lb. What is objected to is the selling of a weighted jar as honey ; people only need to be had once ; they never buy again. Thus is our trade being ruined, as a fraud once discovered in one produce advertised as Australian is looked for in every other product of our country. Australian manufactures over here are of the very best quality as a rule, and I am writing you this in the hope that your paper and association will take up the matter on behalf of the beekeepers and people at home whose trade is being injured in this way.

If need be I can procure the jars as evidence if any of the association care to take the matter up, as they are fairly wide spread throughout the shops in England.

This is a matter that should be taken up by the Beekeepers' Association. As our correspondent points out, fraudulent trading of this kind would soon have the effect of ruining the Australian honey business in England. People who are victimised in this way will probably blame the exporters. If one buys honey at 2/9 per lb., and the jar makes up half the weight, he is actually paying 5/6 per lb. for the contents. In Australia the same honey is worth from 9d. to 1/- per lb. Such brazen dishonesty as this should be severely punished."

(I agree with the Editor of the " Land " in his remarks, and while reading the above several thoughts passed through my mind. Was the honey really Australian ? Persons who sell short weight are just as likely to be honest (?) enough to misrepresent the article to be something better than it is. If Australian honey secures a name for its quality there much honey will be labelled Australian ; in the same way much of the Australian honey has been selected and sold on the British market as British. How is Australia going to prevent it ? Honey is exported in bulk, sold to dealers and packers who bottle and label. When once it leaves Australia we lose all control. There is but one way and that is to have a department established in Britain where all Australian produce can be sent, packed there to suit the demand and sold under the name of Australia. Unless Australia advertises herself and protects herself against fraud she will be taken down. The quality of Australian honey has, apparently, since the war started, made a name that it is advisable it should keep; the British demand for it is great and something should be done to retain that demand and good name and not place the name of Australia in the hands of dealers to make or mar as suits their pocket.

Earthenware jars for retailing honey may be a good thing and, certainly, would be cheaper than glass, and, perhaps, cheaper than tinware for small packages, and should make an ideal package if the weight were not against it. I see no reason why a thin light earthenware jar should not be made for a honey package. This might be worth while considering. Has anyone tried it ?—Ed.)

The Scottish Journal of Agriculture

ISLE OF WIGHT DISEASE IN HIVE BEES.

In an instructive joint contribution to the SCOTTISH JOURNAL OF AGRICULTURE, which is too lengthy for reproduction or for sufficient quotation in our periodical, Dr. John Rennie gives a report of experiments on "Isle of Wight Disease in Hive Bees." The following remarks are given by way of introduction : "In a former paper issued under the present investigation * the failure to produce Isle of Wight disease in hive bees within a working season by means of direct contact with frames and hives and by feeding upon stores of bees suffering from this disease ,was established in a limited number of cases.

Proc. Roy. Phys. Soc Edin , 1916.

Further experiments and observations of a like kind have been continued, and in six other instances the results within the time specified was the same, i.e., disease did not develop amongst the bees which fed upon the stores and lived upon the frames of sick bees during the whole of the experimental period, which in each case extended over the whole of the working season. It would certainly appear that normally the disease is not readily communicated by such means."

The experiments conducted are of the following character: (1) Experiments in infection by means of frames, stores, and sick bees; (2) experiments in re-queening; (3) experiments with brood of diseased stock; and (4) experiments with queens of diseased stock.

Dr. Rennie and his colleague conclude by giving some remarks on the communication of the disease, and by a general survey of symptoms and signs with an attempt at differentiation from kindred disabilities. We note that they agree with us that " The ordinary symptoms . . . . are not specific to the conditions known as Isle of Wight disease, but appear to be usual when adult bees are incapacitated from various causes." Such a view is hardly accepted except by an insignificant minority of non-orthodox apiarists.

The following are full extracts from their notes on the **Communication of the Disease**: ". . . attempts to convey the disease by combs and stores have in general been failures, while contact experiments of presumed healthy with sick bees have yielded a proportion of positive results. We incline strongly to the view that the sick worker bee is the chief agent in communicating the disease to other bees.

[Whilst emphasising that the sick bee plays a leading rôle, by association, in the spread of the disease, other causative factors are not denied. Tinsley's researches record the possibility of infection through the use of infected stores. There is the suggestion that we are dealing with a comparatively non-resistant organism, and this would well apply to a protozoan, though even a spore-bearer.—Ed. B.W.]

Notwithstanding the variation in the result as shown in the other experiments, the evidence as a whole derived from a very wide experience in dealing with the disease in the North of Scotland particularly, leaves practically no doubt in our minds as to the infective nature of this disease. The results recorded show that extinction after known contact with the disease is more frequent in winter than in summer. This is doubtless because in large measure loss in summer is compensated by production of bees; at the same time the closer association as a cluster in winter probably fosters the disease. Also as the ventilation of the hive in winter is usually much more restricted, this probably has the same effect. [The harmful effects of prolonged confinement, amongst other factors, merit equal emphasis.—Ed. B.W.]

With regard to those cases in which the disease did not develop after contact within the working period, ... but in which at a later season it appeared, we have observed that occurrences of this nature are not infrequent. We have in common with various beekeepers of experience found that in stocks which have been associated in a particular area with sick bees, e.g., those taken to heather in summer, the disease often appears in the following working season. In these cases infection was not conveyed to the bees which were actually in contact with the disease, for with the exception of the queen these had completed their normal life without showing any signs of the disease before it appeared in the stock. And these bees which actually developed the disease were never in the infected area at all.

The readiest explanation in such cases, and one which must hold the field in the meantime, is that in these instances we have an infection from an independent source and that original contamination was merely assumed. We acknowledge, however, that cases of this nature are fairly numerous, and we cannot set aside entirely the possibility of another explanation. [Presuming that association with diseased bees had rendered those that did not develop the infection as mere " carriers," a sign of resistance in itself, it follows that should a weak "inbred" queen replace the original queen in the following season, or more frequently, should the original queen from overwork and exhaustion and from comparatively **old age**, have become the mother of a weaker progeny, the latter are clearly disposed to succumb to the infection " carried "by earlier generations. Therefore although the weather may be stimulative to active breeding, the queen, being old, cannot compensate for the loss.—Ed. B. W.] . . . . . . The assumption of a latent non-infective period for the causal organism would explain all such cases; so also would the absence in the first season of the conditions necessary for its development in the bees. [This assumption would in a great sense flatly contradict the researchers' findings, because if the causal organism is chiefly transmitted by the infected bee, and yet " these views imply a prolonged vitality for the organism outside the bee," as Dr. Rennie and his colleague admit, in spite of their assurance that "attempts to convey the disease by combs and stores have in general been failures," how can we possibly then trace the infection cycle? What other factors of transmittance outside the bee can be suggested? If the most unfavourable period in bee life is not sufficient to contribute to their submission to illness, can we imagine the most favourable period as likely to furnish such unfavourable factors, presuming that bees of equal original stamina are dealt with under the two conditions. The assumptiom is that probably the two different progenies are widely different in constitution as above suggested.—Ed. B. W.]

From the results recorded under brood experiments it would appear that the queen from an Isle of Wight diseased stock does not transmit the disease hereditarily. This is corroborated by the general results obtained . . . . . . where such queens were transferred from their sick stocks to healthy, in which they produce bees over prolonged periods covering usually full working seasons without the appearance of disease. [Until a greater number of conclusive experiments are conducted, it is logical to assume the possibility of a degenerate infected queen transmitting the disease through association with her new society of healthy bees, unless the latter are of a good breed. It is important also to learn of further negation of hereditary infection.—Ed. B. W.]

We have further obtained some evidence that such queens do not produce bees which are specially susceptible, i.e., of inferior racial quality. Brood from such queens removed from the infected stock and transferred to hives in the immediate neighbourhood did not develop the disease on reaching the adult stage, although the opportunities for infection were very favourable.

In none of our experiments . . . . . . did the queen convey the disease by contagion.

From the fact that the queen in a diseased stock invariably survives to the last, it is generally assumed that she is immune to this disease. Such an assumption is not altogether warranted. It must be borne in mind that she is constitutionally adapted to a much longer life than the worker bee and to live a different kind of life. It may be that the queen does contract the disease, although she does not die before or along with her worker offspring. In this connection one feature has impressed us in reviewing our results from experiments with queens. We are not satisfied that the production of queens from Isle of Wight diseased stocks is as good as that of queens of similar age from healthy stocks. This problem is the subject of investigation at present. [The question of the immunity of the queen has another aspect which we dealt with in the BRITISH BEE JOURNAL for October 24th, 1918. It will greatly help the science of the Apiary to further experiment on the subject of hereditary immunity.—Ed. B. W.]

The Domestic Beekeeper

SWARM PREVENTION.

Extracts from an Article by Fred W. Hall, Colo, Iowa.

It used to be customary to measure the success of the beekeeper by the number of swarms he had, the more the swarms the more successful beekeeper he was considered.

There was some truth in this in the manner in which they took the crop, but this has all been turned right around the " other way to " in the up-to-date method of beekeeping. The smaller number of swarms the better the success. The man who has the most perfect control of swarming has much the best chance of a crop of honey.

First : See that the hive has the needed ventilation, first by spacing at least the super combs wide (1½ in. from center to center) use no excluder between brood-chamber and supers. Pull open entrance and " stagger " supers, if found necessary. Supply plenty of built combs for the needed room. Lift a few combs of brood from the brood-chambers to the first super when they appear strong enough to stand it, filling their place with all worker combs taken from the super.

About a week later if the weather continues good, two more combs can be changed. If, a week later, everything is favourable, more frames are changed from brood-chamber to super, with perhaps " jumping " some of the frames from sides to middle of hive.

The work of spreading brood too early should be done with caution, and unless good judgment is used, the spreading of brood had better be left with the bees, but we are talking about prevention of swarming now.

The Demree system of swarm prevention is similar, only all brood but one frame is raised to the super, filling up with full sheets of foundation, placing a queen excluder over, then the brood and other supers above. The queen of course stays in the brood chamber.

This is a good method and may hold the colony from swarming all season, but is not swarm proof. Queen cells are likely to be built above the excluder and must be cut out a week later, at the same time providing a way of exit for the drones above the excluder or they will die and fall down on the excluder, clogging it if enough drones do so and may stop circulation and smother the bees above the excluder.

The New Zealand Beekeepers' Journal

THERAPEUTIC VALUE OF BEE POISON.

By Uomo Selvatico.

Re your note on " Apis Mellifica." I am sorry I am not in a position to pronounce a verdict, as I know little or nothing about homœopathy, and the patient is not in front of me for examination and cross-examination. Two points, however, strike me as rather remarkable : (1) Apis mellifica is used as a cure for the poison of other insects. Is this on the principle of taking a hair of the dog that bit you, or, at least, the dog's first cousin ? Would it cure a bee-sting as well ? Then there is the question of every bio-chemical poison having its own specific enzyme. Would a course of Apis mellifica render one immune to the sting of a wasp or a hornet, or cure such a sting when already received ? I hae ma doots.

(2) I see the remedy is given by the mouth, and was so administered in the case cited. This is interesting, as most of these bio-chemical products are practically inert when taken in this way, and have therefore no immunising effect on the patient. Whether this applies to Apis mellifica I cannot say. The subject of immunity is an intensely interesting one, and any suggestion bearing on the question is worthy of consideration. But of this anon.

Farm, Field and Fireside.

BUYING SWARMS.

Although the prices of swarms seem high, they are, in my opinion, the safest investment in bees at the present time, for the reason that they are more likely to give a return than nuclei or stocks purchased in the autumn. In these days of disease, the late autumn and winter is a very difficult time to tide over, and if one has bought a nucleus, fed it up at considerable cost to winter and then it goes under from " Isle of Wight " disease, the loss is very heavy. On the other hand, a good swarm, well started on combs or even foundation, is almost certain to give a good surplus within a month or two of hiving, and if they should happen to go under in the winter one has had one's money back in honey.

A good deal of misconception exists about swarms which are of two kinds, natural and artificial.

Natural Swarms

are, of course, the best to buy, because it is seldom that a diseased hive reaches the swarming point. A prime swarm is the largest and contains the old queen, while second swarms, or casts, are usually very much smaller and have a young queen. From the point of view of honey storing immediately, prime swarms are the ones to buy, and the heavier they are the better. Not much surplus can be expected from one weighing less than 4 lbs., and swarms of 6-8 lbs. are the ones to get. If the honey is about, no other stock will beat them for gathering it in.

When buying swarms from a distance, it should be remembered that they will weigh less on arrival than when they were hived, because a natural swarm comes out with every bee heavily laden with honey, and this is largely consumed on the journey.

Artificial Swarms

generally contain more bees to the pound, because they are not given the opportunity of filling up as a natural swarm does, being simply shaken off the combs in many cases.

Casts for Increase

If one is courageous enough to risk the disease and increase one's apiary by natural means, casts are the best form in which to procure the bees. Little casts of 2-3 lbs., which contain, as they do, a young queen, will, if properly fed and gradually built up by combs or frames of foundation, make the most reliable lots to winter. In some exceptional seasons they do not even need feeding, but, as a rule, they want to have a slow feeder going steadily from the time they are hived until the middle of September.

Do not forget, when hiving big swarms in hot weather, that wired foundation is absolutely necessary, for a big swarm not only generates a lot of heat, but its weight alone will pull down foundation which is not firmly secured. At best it is liable to buckle and make irregular combs, which are, to put it mildly, a great nuisance.

As the honey flow approaches, see that the queen has plenty of room to lay in. Piling on supers with excluder under will not prevent swarming if the queen is breeding faster than her accommodation, and this is the reason why so many complain of the Italians swarming. If there are brood combs choked with honey they may be extracted, but if all the combs are full of brood the only remedy is either to add another hive body or transfer the stock into one capable of holding more combs. An Italian queen in full profit will fill 15 frames of brood under good conditions.

Ivo

Proceedings of Associations and Clubs.

RE-STOCKING.

The Government Re-stocking Scheme is the chief topical subject for discussion in bee societies and clubs. The usual dissatisfaction is met with, but in addition we understand that the Dutch colonies in skeps imported from Holland early this spring were so weak that the required number of nuclei to be raised from them is still far from being realised. The last winter in Holland, it is alleged, was rather more severe than usual; consequently, many colonies emerged from its hardships exceptionally depleted. In any case, it is believed, they could not have been transported safely, had they been in greater strength. In support of this view we learn from another quarter—in this case, a co-operative Association—of their heavy loss in transporting bees early in June, at which period the heat of stronger colonies in addition to the atmospheric heat is bound to jeopardise the safety of the bees in transport.

Our contention is that the Government have done a real national service to the beekeeping community by taking bee culture under their wing, however views may differ on the extent of their present effort, which is, after all, a preliminary undertaking that is bound to be enforced and expanded. We feel sure under the circumstances that an appreciable majority of British apiarists will feel grateful to the B.B.K.A., and especially to its Secretary, for inducing the Government to take up an active policy in place of their former and notorious apathy.

Much reflection has been made on the quality of the Italian queens imported. These being of the Penna strain which is in no need of our praise, we cannot but express our deep regret at the unmerited criticisms that have been advanced, instead of the due appreciation to the co-operative efforts of Signor E. Penna, whose able specialisation in queen-rearing and his conscientious business methods are beyond question. As an illustration of the criticisms advanced it is alleged that some of these queens have never been mated. At least our own experience does not support this allegation as we have always been more than satisfied with the Penna queens. But we may record for the interest of others, that in exceptional cases these queens have been found by ourselves heading swarms of Dutch bees from nuclei that have hardly developed! Examination of these nuclei proved that the queens were fertile and not drone-layers. This occurrence incidentally suggests that the queen has a feeble influence in the causation of swarming and that the worker bees "have the biggest say," since in this case we are faced by a strain which is habitually fond of swarming, inducing a queen of an opposite tendency to gratify their desire, for no other reason that we can understand, since the greatest care was taken from the beginning to avoid the presence of queen cells, in addition to ensuring the satisfactory development of such nuclei.

In three instances, we have also met with nervous queens flying from their hives under perfect weather conditions which entirely contra-indicated the use of a subjugator. Every one of them proved to be fertile. One was followed and traced to the neighbourhood of one of the unavoidable daily swarms from the Dutch skeps in our stock apiary during warm weather. She was duly captured and returned safely to her nucleus.

These instances may apparently suggest that one was dealing with virgin queens, but our examination, as above mentioned, entirely excluded such conclusion.

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B.B.K.A. CONVERSAZIONE.

An important Conversazione was held by the British Beekeepers' Association early this season for discussing "The Future Development of Beekeeping." Mr. W. F. Reid, F.I.C., F.C.S., presided, and Mr. Judge, the able secretary to the Kent B.K.A., opened the discussuion. Beekeepers from America, Australia, and New Zealand were present, and the meeting was in every respect a great success, showing, in the words of Mr. Reid, "that the interest in beekeeping had not only been maintained but increased during the past troublesome times." Mr. Boyden, of the A.I. Root Co.; of America, spoke in words of friendliness, conveying a message of good will from American apiarists.

Mr. Judge pleaded for the decentralisation of the beekeeping movement headed by the B.B.K.A., his contention being that this would give distant associations a chance of an active part in the organisation, and that it would facilitate the development of British bee culture, although at the cost of greater expenditure. His line of argument was as follows: "It appears to me that we have a number of problems to solve before we can expect any real development in beekeeping, by re-organising and co-ordinating the work throughout the country. As you are aware, the British Beekeepers' Association and associations which are affiliated to it are organised on practically the same lines. In my opinion, that is not a good system to follow. We are labouring under the same conditions that has existed for quite a number of years, although efforts have been made in the past to remedy this state of affairs. I suggest that, if we are going to expand and develop to a greater extent, we must endeavour by some means or other to get better representation from the various parts of the country on the Council of the central body. At present we are more or less centralised, and it is my opinion that we must try to decentralise, and also to ordain some sort of control for the whole organisation. I am aware that this is a very difficult proposition, but we in Kent have had some experience along that line, and our experience is that it is possible. I would venture along that line, and our experience is that it is possible. I would venture to suggest that, to overcome the difficulty under which we are at present labouring, we divide the Country into groups of counties or divisions; these again should be divided into sub-divisions, and take the place of our ordinary county associations......The arrangement for representation from the affiliated associations that obtains at the present time makes it impossible for us to get the best results from our friends in the North and Midlands; we are conscious of it year by year. They cannot attend the council meetings owing to the lack of time and the expense involved to come to London. If we could organise the groups of counties, or divisions of the country, and then the sub-divisions as suggested, the latter could send their delegates to the former, and the former their delegates to the Council Meetings of the Central Association, to attend to the business of the Association, to explain and support any measures that may be suggested by the particular organisation they represent. We know there are experienced and practical beekeepers in every part of the country, but at present the British Association has to be run mainly by those living comparatively near London."

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SCOTTISH BEEKEEPERS' ASSOCIATION.

In the current issue of the BEEKEEPERS' GAZETTE the following report appears:

The Annual Meeting of the Executive was held in the Royal British Hotel, Perth, on April 12th. A good attendance of representatives from various parts of Scotland was presided over by the President, the Rev. J. Beveridge, B.D., who, in his introductory remarks, spoke of the trying conditions under which the work of the past year had been carried on; yet he had to report that progress in every department marked the success of the association's efforts. He was happy to note how in authoritative quarters the association was now being given due recognition as a national association, and that in evidence of this he had the glad news to give that the Board of Agriculture for Scotland was so impressed by the successful efforts of the S.B.A. in fostering the industry of beekeeping in Scotland that it had decided to give a grant in aid of such work. Another noteworthy mark of progress was the introduction of a scheme for examinations in beekeeping. An examination had been already held, and the whole scheme was now completed. It was also interesting to note that the association had had its work recognised by the Highland and Agricultural Society, and that arrangements were now completed to hold a honey show in conjunction with that association's show in July in Edinburgh.

After the usual routine business had been completed the Secretary read his annual report. It showed that in the last four years the membership had risen from 250 to considerably over 2,000, and that the number of federated associations had increased from 3 to 23, while the roll of "independent members" showed a very large increase, and that few counties now remained unrepresented. The Treasurer submitted his financial report which showed a steady advance in the credit balance, and that the financial stability of the association was now secure. and would soon permit of the engaging in larger schemes for the general benefit of beekeepers in Scotland. Both reports were adopted, and both officials thanked for their labours. It was decided to issue this year an annual report, as was done in 1916, copies of which will be sent to all members. The President, in his retiring address, referred to the fine harmony that existed between all members in the conducting of the business. He then installed the new President, J. Anderson, Esq., M.A., B.Sc., Aberdeen, and spoke in eulogistic terms of the valuable work he had already done as Lecturer on Beekeeping to the North of Scotland College of Agriculture, and of the fitness of such an authority to guide the affairs of the S.B.A. Mr. Anderson expressed in suitable terms his deep appreciation of the honour done him, and in an interesting address brought specially to the notice of the Executive the dangerous state the honey market of Britain stood in to-day by the increasing imports of foreign honey, and the necessity for the S. B. A. to educate the public to recognize the S. B. A. labels as guarantees of pure and Scottish honey. He referred to the attempt of America to seize the markets and informed the members that a representative of the Root firm, of America, was now in Scotland for purposes of honey sales.

The election of office-bearers was now made. Hon. President: His Grace The Duke of Atholl, K.T., D.S.O., C.B. Hon. Vice-Presidents: The Rt. Hon. Winston Churchill, Major Sanford, Sir Robert Patrick Wright, Sir William Watson Cheyne, Lord Forteviot, Hon. Associate: The Rev. J. G. Digges. Vice-President and President-elect: Jas. H. Langlands, Dundee. General Secretary: Henry Crombie, M.A., Dunkeld, and as Colleague: D. M. Rollo, Cupar. Treasurer: J. W. Moir, Edinburgh. Librarian: J. W. Moir, Edinburgh. Auditor: G. Crichton, Edinburgh. The following were elected as co-opted members:—G. W. Avery, Edinburgh; J. Tinsley, Kilmarnock; A. Menmuir, Edinburgh; R. Steele, Newburgh; J. Stewart, Perth. Conveners: Finance Committee—J. W. Moir, Edinburgh; Library Committee—J. W. Moir, Edinburgh; Shows Committee — A. Aikman Blair, Edinburgh; Propaganda Committee — D. M. Rollo, Cupar; Markets Committee — T. Pate, Milnathort; Legislation Committee — P. Macpherson, Perth; Education Committee—Rev. J. Beveridge, Gartmore. The members of Committee are to be chosen as in past years, by giving each representative the opportunity of saying on which Committee he desires to act. The reports of the various Committees were now submitted. The Treasurer intimated that up to date the sum of £30 had been subscribed for the Show Fund. The Convener of the Propaganda Committee reported that the Census Return Form had now been prepared and would be issued at an early date. The Education Committee recommended that all federated associations should be asked to arrange for holding an examination for its members who desired. This was agreed to. Specimens of the two Certificates —"The Beemaster" and "The Expert Beemaster"—were shown and much admired. The work was in the able hands of Mr. J. Langlands, Architect, Dundee, and reflects great credit for design and conception. A provisional list of Examiners was drawn up. A healthy enthusiasm amongst members to sit for the examinations is already apparent by the number of applications received.

Mr. Langlands referred in sympathetic terms to the great loss sustained by the association in the death of the late Mr. Charles Nicol, late Secretary, whose great enthusiasm, ability and energy had done so much in the reconstituting of the Scottish. The Secretary was instructed to write a suitable minute and embody it in the records of the Association. Bailie Riddell expressed the thanks of the Executive to the various officials for their unsparing attention to the interests of the association, and the members most heartily approved. This concluded the business. Subscriptions from members and well-wishers towards the Show Fund will be deeply appreciated.—Henry Crombie, Hon. General Secretary.

⁂ The Editor of **The Bee World** will be always glad to receive from the the Secretaries of Beekeepers' Associations and Clubs in Great Britain and abroad reports on important proceedings for publication. The co-operation of foreign correspondents for the supply of news and notes on beekeeping conditions abroad is cordially invited. Photos and illustrations of interest from our readers for reproduction in this periodical are specially welcome.

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Our Book Shelf.

Preliminary Report on Isle of Wight Bee Disease.

By JOSEPH TINSLEY, B.B.K.A.

Lecturer on Beekeeping at the West of Scotland Agricultural College.

A capable and patient scientific researcher may spend months on investigation and yet end by practically accomplishing nothing, or he may on the other hand succeed in advancing knowledge to a small or great extent. Under all conditions his devotion to his cause and his silent labour should deserve our respect and encouragement.

Unless we are greatly mistaken, the Preliminary Report issued as **Bulletin No.85** by the West of Scotland Agricultural College, and embodying introductory notes and conclusions on research conducted at the Experimental Apiary of the College by Mr. Tinsley, has been far from receiving sufficient attention from the Bee Press in this Country, since it is not necessary for a researcher to record original discoveries before his work merits recognition. His criticism or his line of investigation may be full of helpful suggestions. Again, confirmation or otherwise of the recorded results obtained by previous investigators is in itself valuable. In this light we strongly advise our readers to apply for copies of this useful booklet and to digest its contents.

Discussing **Infection Experiments,** Mr. Tinsley mentions: "To illustrate the facility with which the disease can be transmitted, the following experiments were carried out at our Research Apiary:—

(a) About 200 bees crawling on the ground, and showing abnormal distension of the abdomen, were collected, chloroformed, and the liquid contents of the intestine removed. This fluid, mixed with a pint of sugar syrup, was systematically fed to healthy colonies until the crawling symptoms were evident. The colonies thus fed contracted the disease in a virulent form in from three to six weeks.

(b) Colonies in the last stage of the disease were united to healthy colonies by placing all the sick bees, combs, brood, and stores in the form of an additional brood chamber over the top of unaffected stocks. (The queens in the diseased colonies were removed previous to the union). It took from four to six weeks to transmit the disease by this method.

(c) The entire brood chambers from colonies that had recently died from Isle of Wight disease were placed over the brood chambers of healthy colonies (as in the operation of uniting or doubling). The infected brood chambers, which contained faecal matter in abundance on the frames and over the combs, and many dead bees in the cells, were not interfered with. The chamber was necessarily used by the bees as a honey super. This compelled the healthy bees to remove the dirt and the debris from the soiled combs, and brought them in direct contact with disease infected material. The time of infection in this case was longer—from six to eight weeks.

(d) Combs from colonies where the bees had recently died from the disease were broken up and mixed with water. The extract, after being strained through coarse cloth, was mixed with sugar syrup and fed to healthy colonies. In this case infection was even slower—from eight to ten weeks.

(e) The debris and faecal matter of the hives of several colonies that had died from Isle of Wight disease was collected by scraping floor boards, frames, etc. This was mixed with water and fed with sugar syrup to healthy colonies. It is doubtful if, in any single case, this method of infection was successful. It should be mentioned that the material was obtained from the hives some time after the death of the colonies, varying from two to twelve months. Presumably the organisms causative of the disease have little vitality outside the bee body, and are killed out by exposure to the atmosphere.

(f) Honey extracted from combs upon which diseased bees had died during the winter was given to healthy stocks. These bees did not contract the disease.

Other methods of bringing about infection—such as placing sick bees, numbering from fifty to five hundred, in healthy colonies; requeening a healthy colony with a queen from a diseased stock; transferring larvae and brood from an unhealthy colony to a healthy colony—were tried many times. The results were, in the main, inconclusive.

Although some of the latter methods of infection did not always prove successful, yet from a study of the history and the spread of the disease, and of the results of the first experiments outlined above, we must regard the Isle of Wight disease as highly contagious, and beekeepers will be well advised to pay every attention to disinfection of hives and appliances, and to limiting the spread of the disease."

So much for a definite record of definite experiments, however much these may be contradicted by the experience of others. There is at least an attempt to definitely discover the methods of infection and the corresponding incubation periods, or rather the corresponding time during which infection may be contracted.

Referring to **Remedial Measures** Mr. Tinsley assures us that neither **Izal, Bacterol, Dioxygen,** nor **Flavine** have any value whatsoever in the treatment of this infection, and thinks that "little is to be gained by the search for a so-called specific among medicines or chemicals." This cannot be readily agreed to by any one who would impartially analyse the factors responsible for the incidence and spread of this disease. Most of these preparations to which Mr. Tinsley refers are good germicidalpr eparations, which, whilst being far from suitable for internal administration to bees, yet, nevertheless, they can be employed as amongst the weapons for fighting I.W. infection. This does not mean describing any germicide as specific for this disease in the absence of practical and overwhelming evidence, and we will never think for a moment of discouraging any attempt at discovering a "specific" drug, for **Nosema Infection**.

Surprisingly enough Mr. Tinsley tells us that "the most promising results so far obtained by himself have been got from the employment of a pure culture of **Bacillus Bulgaricus.** This is the organism recommended by Prof. Metchnikoff, as a remedy for intestinal troubles. It acts as a scavenger of the intestine and displaces putrefactive and injurious organisms in the bowels." Considering that the basis of this treatment is really an antiseptic action, it is clear that we should bear in mind the advisability of exhausting the trial of other promising preparations before finally dismissing the use of antiseptic therapy as non-promising. The credit for the first use of the Bacillus Bulgaricus for I.W.D. (though not in a pure form), belongs to Reid, who employed **Bulgarian sour milk** for the purpose. In **Supplement No. 10 to the Journal of the Board of Agriculture,** Graham Smith and Bullamore refer to this remedy in the following words: "Sugar syrup is known to act as a purgative. If open air feeding is practiced the bees may be seen discharging drops of clear fluid as they fly back to the hives from the feeding pans. When syrup is given in the hive great activity prevails and many bees may be seen taking cleansing flights. There can be no doubt that this process eliminates from the bowel large numbers of bacteria and their products and also any of the **Nosema** parasites which may happen to be free. Possibly also, **Nosema** toxins, of which, however, we have little knowledge, may be got rid of. Treatment by feeding undoubtedly effects temporary improvement, but no examples of a permanent cure have come to our knowledge. Reid (1911) prolonged the life of some bees by feeding with dilute honey to which Bulgarian sour milk had been added. There was no evidence that the bacillus of sour milk had multiplied in the stomach or intestines of the bees so treated, and when feeding ceased they died. It is probable, therefore, that the dilute honey was the cause of the improvement." No mention of the possible value of nascent lactic acid as an antiseptic is made, since we know that dilute honey or syrup alone is of no special value in this respect, and the discharge of water by the bees may be merely due to a natural desire (voluntary or otherwise) to concentrate its contents.

It is worth mentioning in this connection that such a preparation as **Lactobacilline** merits a trial. It should give as good, if not better, results than pure culture of Bacillus Bulgaricus. Further, being obtainable in tablet forms it is more convenient to keep and to distribute. It is manufactured by Messrs. Darrasse Frères of 13, Rue Pavée, Paris, and is described as "a lactic ferment which posseses the property of checking intestinal fermentations caused by the pathogenic organisms of decomposition. It consists of lactic germs selected with the greatest care from European and Eastern varieties. (See **Annales de L'Institut Pasteur,"** November, 1906; Professor Metchnikoff; "The Prolongation of Life.") These organisms have been the object of long and careful investigation on the part of Professor Metchnikoff; they are **absulutely innocuous**......Lactic organisms brought into contact with sugary substances determine the production of lactic acid in a nascent state within the organism, this exerts: (1) A topical action on local affections of the intestine; (2) An antiseptic action which arrests intestinal putrefaction......"

In experimenting with Lactobacilline for relieving the intestinal disorders of bees it is necessary to use a solution of sugar or honey because sugar promotes the multiplication of the bacilli and favours the production of nascent lactic acid." A five grain tablet should be crushed and mixed with a pint of the thin syrup to be used for spraying or feeding. "Lactobacilline in the form of tablets keeps good indefinitely in no matter what climate, and the bacilli that enter into its composition retain their activity unimpaired." It may be conveniently stocked by beekeepers at any time.

Mr. Tinsley can at least claim that he has re-emphasised a helpful scientific method for combating intestinal putrefaction in bees; and although several of the critical comments that apply to Dr. Rennie's researches would equally apply to Mr. Tinsley's, the gratitude of beekeepers is due to both investigators for at least a sincere effort to serve their Cause.

BEEKEEPING SIMPLIFIED.

By W. HERROD-HEMPSALL, F.E.S.

A second edition of this popular little manual has recently made its appearance. Its author in his capacity as a noted teacher, beekeeper judge, and journalist, needs no introduction to our readers, most of whom are no doubt regular readers of the BRITISH BEE JOURNAL and the BEEKEEPERS' RECORD.

Though intended for the cottager and smallholder this work is certainly instructive to many others, since it clearly embodies in a small compass and in a lucid style the best of the author's mature experience. It is both well printed and illustrated.

Mr. W. Herrod-Hempsall in his prominent position can claim many critics, but we feel sure that his educational efforts, especially among the wide class of smallholders, to whom **Beekeeping Simplified** is primarily intended, can safely claim many friends.

I.O.W. DISEASE. Its Prevention and Cure.

By J. ROBERTSON.

The author of this helpful brochure has certainly succeeded in emphasising the evil influence of "inbreeding" in relation to the causation of I.W. disease. On the other hand, he unfortunately follows the popular method of viewing this disease from just one angle. He correctly puts his faith, however, in the mother of the colony, and believes in **re-queening** as a cure for this infection, holding "that the failure or success depends on the quality of the instrument used, the queen." This perfectly logical course hardly needs any emphasis for the treatment of the disease during the breeding season. But what we and many others would like to know is how can we possibly make use of re-queening in curing I.W.D. when its chief season is during the cold weather with breeding at a standstill. What is the value of superseding the queen, should this be at all practicable, at such a time when she is not productive? The treatment of I.W. infection does not present difficulties during the spring or summer, but principally during the late autumn and winter. To solve this riddle is the question, but Mr. Robertson does not make an attempt.

We strongly recommend his brochure however for critical study.

THE PRACTICAL BEE GUIDE.

A Manual of Modern Beekeeping

By the REV. J. G. DIGGES, M.A.

As one of the leading manuals on bee culture, this excellent work still maintains its reputation, which is testified to by the quick issue of a revised fourth edition, completing 19,000 copies since it was first published in 1904.

Fully informative, even as a reference work within limits, and both practical and theoretical, it is a complete guide on its subject, which does a great credit to the literary ability and practical knowledge of the author.

The work is worthy of a leading place in every bee library.

ITALIAN QUEEN REARING.

Signor Enrico Penna contributes an instructive article to **L'Apicoltura Italiana** on the merits of the pure Italian bee and the necessity of maintaining its purity by avoiding the importation of bees from beyond the Alps. He refers to the faith placed in it in all countries and to its adoption in Great Britain for combating I.W. Disease.

NEW ZEALAND CO-OPERATIVE HONEY SALE.

The **New Zealand Co-operative Honey Producers' Association** reports that its total sales for last year amounted to more than thirty-five thousand pounds, that the number of the shareholders increased from two hundred and thirty-five to four hundred and twenty; and that its subscribed capital has increased to over six thousand pounds. The report clearly shows that the New Zealand Government take great care in the grading of honey and in the maintenance of a good standard for exportation.

THE PRISONER BEES.

It is reported in the **Revue Francaise d'Apiculture** that the German military authorities have sold a large number of colonies of bees captured during the war from the fighting areas. It is a great pity that the greatest sufferers from a national calamity of invasion are the farmers and apiarists, and mostly the poor.

INSPECTION IN MICHIGAN, U.S.A.

Gleanings reports that "the Michigan Beekeepers' Association succeeded in getting the legislation of that State to appropriate 10,160 dollars per year for the next two years for inspection work.

DEATH OF TWO PIONEERS.

The American Press reports to our deep regret the death of Frank Penton, the entomologist, apiarist, teacher and traveller, who had served for many years American bee culture, and of Eugene Secor, a former manager of the **National Beekeepers' Association** of the U.S.A., and a well known poet in the Bee World.

PORTO RICO BEEKEEPING.

The **American Bee Journal** reports: The industry of beekeeping, which was reported as in its infancy in Porto Rico in 1911, by circular No. 13 of the Porto Rico Agricultural Experiment Station, is progressing fast. Mr. Elton Warner, who has spent most of his life in Mexico and Porto Rico, gave up a very lucrative position in the U.S. Government employ, in the island, in order to take up beekeeping. Mr. Warner now has some 1,500 colonies in Porto Rico, as well as some 500 in North Carolina.

EDUCATIONAL PROPAGANDA IN KENT.

In the current issue of **Bee Craft** it is announced that a number of courses of Instruction in Beekeeping will be given on behalf of the Kent Educational Authorities, during the coming summer. Each course will consist of five lectures and be of a progressive nature. The syllabus and time table are given below.

Time Table.

BROMLEY, Park House. Lecturer—Major C. C. Lord, R.A.M.C., at 3.30 on Saturdays, May 31, June 21, July 5 and 19 and Aug. 9.

GILLINGHAM, The Park. Lecturer—Mr. G. Bryden, at 4.0 on Saturdays, May 17, June 7 and 21, July 12 and 26.

MAIDSTONE, Brenchley Gardens. Lecturer—Mr. W. H. J. Prior, at 3.30 on Saturdays, May 24 and 31, June 14, July 5 and August 2.

RINGWOULD, The Rectory. Lecturer—Mr. A. Graham Porter, at 5.0 on Thursdays, May 8 and 29, June 19, July 3 and 24.

BROADSTAIRS. Lecturer—Mr. A. Graham Porter. Place, time and dates not yet decided.

Syllabus.

First Meeting.—Introductory Lecture.—The Honey Bee. Its Life History and Habits. Economy of the Hive. Comparison of ancient and modern methods. Functions—fertilisation of flowers, honey production. Honey and its uses. Races. Flora. Diseases. How to start. General conditions in Kent.

Second Meeting.—Establishment of Apiary.—Description of Hives and Appliances. Transfer of Stock to Hive. Demonstration in frame building, wiring and fitting foundation. Preparation of supers. Stimulation, object of. How and when to manipulate. Swarming—Natural and artificial methods. Supering.

Third Meeting.—Examination of Stocks. Preparations for the Honey Flow. Artificial Increase. Formation of Nucleus Colonies. Nucleus Swarming. Queen Rearing.

Fourth Meeting.—Examination of Stocks. Making necessary manipulations and adjustments according to needs. Removal of Surplus Honey—comb and liquid.

Fifth Meeting.—Final Examination of Stocks. Removal of Supers. Re-queening. Uniting. Driving. Feeding. Robbing and its prevention. Enemies and diseases. Autumn management. Preparation of produce for Market and for Show. Grading.

The Council hope that members will take full advantage of these courses by attending as many lectures as possible. There is no charge for admission, and a hearty welcome is extended to all who wish to improve their knowledge of beekeeping.

OXFORDSHIRE BEE EDUCATION.

Practical demonstrations are given every Tuesday, Thursday and Saturday afternoons at 2–4 p.m. (weather permitting) during June and July at Messrs. Adminson's Apiaries under the auspices of **The Apis Club**, Port Hill House, Benson, Oxon. No fees are charged.

BEE SHOWS.

Royal Cornwall Show; June 11 and 12, at Truro. Schedules from Miss Alac Buck, Bosvigo, Truro.

Royal Agricultural Society's Show.—Bee and Honey Section, under the direction of the B.B.K.A. Prizes arranged in groups of counties for Associations affiliated to the B.B.K.A. Schedules from The Secretary, 23, Bedford Street, Strand, London, W.C.2. **June 24 to June 28, at Cardiff.**

Highland and Agricultural Society, at Edinburgh: July 8 and 11.—Exhibition of Bee Appliances and Honey. Particulars from John Stirton, Secretary, 3, George IV Bridge, Edinburgh.

Wyke and Normandy Horticultural Society Flower Show; July 23.—Open classes for Section and Run honey. Section honey prizes, 5s., 3s., 2s.; run honey (1919), 3 1-lb. glass jars, prizes, 5s., 3s., 2s. Entrance fee, 6d.—Hon. Sec., Mr. H. S. Mumford, Heatherside, Normandy, near Guilford.

Kent Honey Show at Wye; Wednesday, August 13.—30 classes, half of each are open to the United Kingdom. Valuable Cups and Prizes. Schedules from Mr. Alfred Lepper, Wye, Ashford. **Entries close August 6.**

Second Annual Show of Flowers, Fruit, Vegetables, and Honey, at Llanelly; August 19.—Three open classes for honey; also open classes in other sections. Valuable prizes offered in all classes. Schedules from Hon. Sec., Mr. W. J. Evans, 45, Coldstream Street. **Entries close August 15.**

Cannock and District Horticultural Society, at Cannock; Monday and Tuesday, August 18 and 19.—Classes for honey and Wax. £12 in prizes and medals (open classes). Schedules from Mr. John Bird, F.R.H.S., "Glenmay," Cannock.

Warwickshire Beekeepers' Association Show at Leamington; September 3 and 4.—Schedules from Hon. Sec., Mr. J. Ingerthorpe, Knowle, Warwickshire.

Kent Beekeepers' Association (Western Division) Show at Bromley; September 6.—Two open Gift Classes for Honey; also Open Class for Boy Scouts and Girl Guides only. Schedules in Press. **Entries close August 30.** Apply to Secretary, Mr. W. E. Clifford, 63 Southland Road, Bromley Common.

Victory Grocers' Exhibition, Royal Agricultural Hall, London; September 20 to 26.—Prizes for beekeepers. All beekeepers who desire a Schedule of Competitors sent them should send name and address to Mr. H. S. Rogers, 31, Queen Victoria Street, E.C.2.

The Arena: Letters to The Editor.

THE DEFECTS OF THE ARTIFICIAL COMB.

To the Editor of The Bee World.

DEAR SIR,—You think the aluminium combs suitable for the brood chamber. Theoretically I at once object. If Dr. Phillip's experiments are trustworthy, the centre of the cluster in winter is warm while other parts of the hive may be at 0° C. What can be the use of employing metal combs to dissipate the heat when heat is almost **the** essential of life?

Yours faithfully,
J. W. PRICE.

The Outlook, Barming Heath.
Maidstone.

[The inventor of the aluminium honey comb claims for it: (1) increase of production; (2) facilities for the control of foul brood and other diseases; (3) the prevention of destruction from moths and rodents; (4) control of the breeding of drones; (5) prevention of loss from melting of combs; (6) long service with proper care. The reasons advanced for these claims are perfectly logical, and tests recorded in American bee periodicals are most encouraging. We have examined and criticised the main advantages and disadvantages of this invention in the BRITISH BEE JOURNAL and BEE CRAFT, and came to the conclusion that in its present shape it is most suited for the brood chamber, since the main advantage is to help in combating disease; moreover, the uncapping knife is likely to damage the edges of the cells if roughly used, but this defect will not remain with stronger metal. This favourable view does not mean that additional improvements in this invention are not wanted.

In a good insulating hive, with correct wintering room, the use of the aluminium comb in winter serves, at worst, by the comparative dissipation of heat, to equalise the temperature of the hive. This apparent disadvantage should be turned into an advantage, by given attention to the adequate insulation of the hive contents, bees and combs together. Moreover, it should be remembered, that the bees usually line the edges of the cells with wax and therefore will generally have a suitable medium to cluster upon.—Ed., B.W.]

WINTER LOSSES.

To the Editor of The Bee World.

DEAR SIR,—Your writings have afforded me unlimited pleasure and only on rare occasions have I not been able to see eye to eye with you, and then on practical points only. Where I am with you every time is on the various causes suggested of losses of stocks of bees. It is not all I.W. by a long way. I strongly believe that whether the animal or vegetable kingdom is examined good health and stamina are the greatest safeguard against contraction of any ailment. I should like to enlarge upon the effect of the greediness of the beekeeper and its consequent effect upon the health and stamina of his bees.

Sometimes I feel I must "touch wood" when I say I have not had any loss from disease for six seasons, or from any other cause, not even swarms. Why is it? Common sense management, cleanliness, proper ventilation, sound, dry and warm hives, natural stores and autumn bred bees with health and stamina in them are the chief essentials at which I constantly aim.

Yours faithfully,
W. H. J. PRIOR.

Culham,
New Eltham, S.E.9.

[We are grateful to such a leading apiarist as Mr. Prior for his encouraging words, most of which he will forgive us for not publishing, though fully appreciating his generous kindness. We fully agree with his remarks upon the necessary conditions for winter safety or at least for minimising the present winter losses, which are prevalent everywhere. We would add that the improper protection of colonies from the cold, if sufficient enough to induce comparative overfeeding for protective heat generation, as appears to be the case in many instances, and in the absence of sufficient opportunities for cleansing flights, will undoubtedly produce a form of disease not unlike that of **Nosema disease** in its main symptoms and will certainly cause big losses. Occasional examples are met with in travelling bees, whether in cages or boxes. In winter it is serious. This will continue until the housing of bees is conducted on sound scientific lines, and not with the idea that any form of wooden or straw receptacle is good enough a home for bees. The most popular hive on the market at present is the W.B.C. hive and the like, vouched for its excellence by apiarists whose success no doubt depended on other important factors, and not on a bee home which lacks in important essentials for winter protection and can only survive through its cheapness.—Ed., B.W.]

"INBREEDING" AND ITS CONSEQUENCES.

To the Editor of The Bee World.

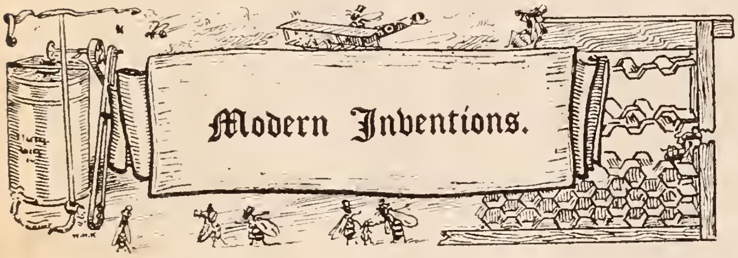
DEAR SIR,—For at least ten years I have been fighting to get recognised the fact that "**inbreeding**" causes constitutional weakness, followed by I.W. disease.

Breeders of "Toy" dogs recognise that a dog is able to keep down its worms (which are met with in **every** dog), but that the Poms ("**inbred**" to ensure smallness) die at a rate of ninety per cent from worms, so that they are lucky to save one in ten; and the same law of Nature operates with bees. You seem to have the same idea.

Yours faithfully,
J. J. LONNON.

Park Village East,
Gloucester Gate,
Regents Park, N.W.

[We endorse our correspondent's remarks regarding the harmful effects of "**inbreeding.**" No one with physiological and pathological knowledge would deny it for a moment that the maintenance, apart from the enforcement, of the natural defensive powers of the organism form the best course for disease control. Further, irrespective of disease, "inbred" bees are hopeless creatures. Examples of the deleterious effect of "inbreeding" are encountered even in the race.—Ed., B W.]


Modern Inventions.

THE ALUMINIUM HONEYCOMB.

We have sufficiently thought of the advantages and possibilities of this invention that we did not hesitate to depict it side by side with the steam honey extractor for the title design of this section of our periodical.

In a literary brochure entitled "**The Aluminium Honeycomb**" the following notes appear: "The Aluminum Honeycomb is an achievement resulting from eight years' experimental work by Mr. George M. MacDonald, a practical California beekeeper. This device has demonstrated through the actual experience of hundreds of beemen that it does **greatly increase the production of honey** and answers every requirement of the bees themselves in doing their work.

It entirely eliminates the loss of bees and honey through the melting of combs in hot weather.

Places entirely in your hands the control of foul brood and all other diseases peculiar to bees.

Makes possible the extraction of heavy honey.

Enables you to control at will the production of drones.

Eliminates destruction of combs by moths and rodents.

In other words, it is a practical, scientific, indestructible device that does its work profitably and with less worry and effort than is experienced by present methods.

The United States Government warns against the destruction of bees through the ravages of foul brood and other diseases. You are acquainted with the present difficulties encountered in removing these troubles.

If you are so troubled, we suggest that you immediately obtain aluminum combs and transfer your bees to them from your wax combs. Extract whatever honey there may be and boil it for ten minutes. This thoroughly purifies it so that you can safely refeed it to the bees. In the meantime the Queen immediately starts laying eggs in the aluminum combs, and by using the honey extracted and purified your worker bees have ample food to supply the brood. This can be accomplished at your convenience—any hour of the day, any day of the year. In this way **no time is lost** and a strong healthy hive can be produced in from twenty-five to thirty days.

The Aluminum Honeycomb is also made with cells of the proper size for production of drones only. This offers a feature never before possible—complete control of drone culture and the strain of bees desired.

These extra drone combs are placed in hives occupied by the best and strongest queens. Before the eggs are hatched they are removed and placed in the hives of weaker colonies. By this simple process new queens introduced or reared are sure to be fertilized by blood from the best stock in the apiary. The inbreeding of brothers and sisters is also eliminated.

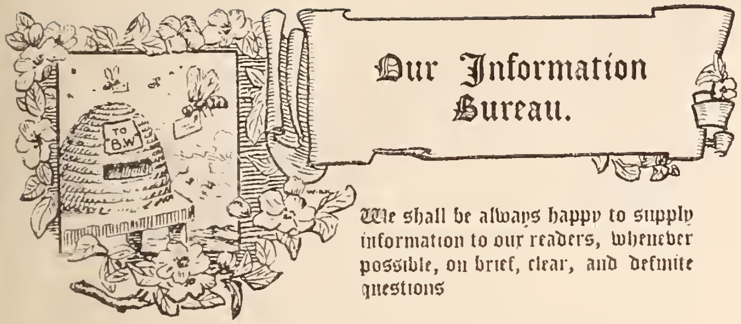
The brood and aluminum honeycomb is constructed with cells 3/16 of an inch in diameter and 7/16 of an inch deep. Extensive experiments show that a good Queen lays nothing but worker eggs in these cells. The important advantages gained is increase in the number of worker bees and the large saving in honey consumed as food by the drones.

Increase in production is accomplished by giving to the bees a complete comb in which to deposit the nectar. With the present wax foundation, it is, of course, necessary for the bees to pull out their comb. The loss in this is: First—the time consumed in making the wax comb. Second—the amount of honey lost in producing the comb. It is estimated that from 10 to 20 pounds of honey is consumed in making one pound of wax. As an ordinary comb contains from seven to thirteen ounces of wax, from seven to sixteen pounds of honey is lost by this unnecessary work."

The old generation of bees may well be puzzled, and the new may equally be fascinated! Moments of leisure and rest, at least, in regard to the prevention of wasted labour, can now be afforded by our winged toiling pets!

Most of the combs of the first two consignments that have so far reached this Country are now tested at the Experimental Apiary of the **Apis Club**, and may be inspected on any suitable day by those interested amongst our readers.

On account of the difficulty of obtaining suitable hives or boxes, these combs have been accommodated haphazardly for the time being in order not to further delay their testing. They were divided into three lots and used as semi-fixtures in boxes for hiving on Dutch and Native swarms from skeps. In one case a frame with a full sheet of foundation was additionally given, but the bees neglected the latter and were satisfied with the aluminium combs in addition to building brace combs in their temporary unsuitable homes. No decamping occurred and no bait (in the shape of brood) to prevent its occurrence was given. At the moment of writing less than a week has passed since the employment of these combs, in which honey and pollen are being stored. We have avoided their full exposure and examination on account of the way in which they are accommodated, but, we hope to have suitable hives shortly; and when transferring to note their condition and to prepare full report for publication in the following number.



Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions

QUEEN INTRODUCTION.

Q. I thought it a good investment to import this spring two fertile Italian queens for the sake of introducing new blood in my apiary, as well as for making increase. I followed the instructions given, namely, inverting the cage in each case over the frames, and removing the paper cover over the candy hole. I took every precaution beforehand to ensure that no queen cells were left, also that no virgin queens were present, the bees having been queenless for some time. In spite of every precaution I am sorry to say the queens, although released, were not found in the hives, and presumably were killed and removed.

As I am ordering two more queens will you kindly advise me whether I would be following a wise policy by repeating this method of queen introduction?

A. In the majority of instances, indirect queen introduction by means of the travelling cage is a success, provided certain precautions are taken. Some of these you have already mentioned. A most important condition is to ensure that your bees acquire the odour of the hive. Again a vicious strain is not to be trusted with queen introduction by ordinary methods. Try direct introduction to frames of capped brood in the central compartment of a **brood-hatching chamber** over a strong colony. Should you not possess one, you can easily adopt a modification of this suggestion. This is undoubtedly the safest method of queen introduction, apart from its usefulness in raising a nucleus to which the queenless bees may be united at a later stage. It is necessary, however, to have a powerful colony for the generation of adequate heat, apart from liberal packing, otherwise the brood will be chilled, and the method will be a failure instead of a striking success. You need not brush or shake off all the bees on the combs. In fact, it is desirable to retain some young bees to attend to the small percentage of uncapped brood until others hatch out. Once your combs of capped brood are in position, place the travelling cage over the space between the two central top bars after removing the wire cloth or perforated zinc placed over the bee hole, and cover adequately with quilts. Further details of instruction are unnecessary. Examine again in a week or less. You should have a sprayer handy to safeguard against the risk of the introduced queen flying through nervousness. This opportunity of examination may be equally utilised for uniting to the queenless bees using a a scented fluid (e.g., 1% warm "Yadil," "Lysol" or "Izal" solution) for the purpose.

Should it be a greater convenience for you, both as regards time and labour, to utilise the **travelling-introducing cage**, which we have ourselves used with success in many instances, you would do well to take the following precautions in addition to the usual ones: (1) you should place the cage inverted over the **space** between the top bars of two combs without any previous preparation to the cage other than removing the cardboard cover over the zinc, and without disturbing the latter. (2) Leave in place for at least two to three days. During this period the queen and the bees in the cage will have sufficient opportunity to acquire the odour of the hive. (3) You may then remove the cardboard cover over the candy hole at the end of the cage. To facilitate doing this one evening, without disturbing the bees, you may place the cage from the beginning towards the back of the hive, with the terminal candy hole so directed. We cannot recommend leaving to the bees to gradually remove the covering over the candy hole, as this is a long process, and may never be attempted in some cases. Our second suggestion may mean spending about a week in this ceremony of queen introduction, but the results are generally certain. It is not safe in many instances to hurry over this procedure, depending on the theory of "fraternisation," which appears to have no existence in the absence of the bees properly acquiring the odour of the hive. There are many practical illustrations in support of this view.

THE DEFECTS OF SWARMING.

Q. Why should a swarm of bees decamp after hiving? How can this be prevented?

A. There are several popular explanations for this behaviour, such as the previous selection by the bees of a more appealing locality, the unfavourable condition of the hive in which they are accomodated (e.g. being repungently smelling of antiseptic chemicals or paint), and the like. Probably one of the underlying factors is the natural instinct of the bees to travel a long distance from their home for the purpose of propagating their race.

Decamping may be prevented almost with certainty by giving the bees a comb of brood and food and a non-repuggant home; yet we have met with three instances of desertion despite this care. Exceptions, however, do not count. The supply of rapidly hatching nursing bees to a swarm is an independent advantage in itself.

THE EXAMINATION OF DISEASED BEES.

Q. Is there any special Government or University Laboratory for the examination of specimens of diseased or suspected bees?

A. The Board of Agriculture and Fisheries appointed towards the end of last year a powerful Committee to outline the best methods for the regeneration of British bee culture as well as to investigate the epidemic diseases of bees. It was then announced that "the Committee would be glad to receive specimens of bees suspected of suffering from 'Isle of Wight' disease for examination and experiment. Communications on this subject should be addressed to Mr. Rogers, at 4, Whitehall Place, London, S.W.1." No fees are charged for such examinations and we would therefore suggest to our correspondent and to other readers, to avail themselves, whenever necessary, of these facilities both for their own knowledge as well as for the support of our official investigators.

THE INCUBATION OF QUEEN CELLS.

Q. Is it commercially paying for a small-holder to attend to the incubation of queen cells removed from his one or two colonies? What is the best kind of incubator? What are the most suitable cells for incubation?

A. It may or may not be, according to the number of queen cells available, and the method of incubation. By employing the **test-tube method** and a small water bath (such as a household utensil of suitable dimensions) heated by gas or petroleum (just to maintain the temperature of the water at blood heat), the cost of incubation will become insignificant. There is no difficulty in disposing of good virgin queens; defective ones must be discarded. The probable net profit per queen after selection and allowing for a good travelling cage and registered postage will probably be about one shilling per queen when each is sold at 4s. 6d. The profit will be higher with successful incubation of a good number of queen cells, which even a small-holder can produce by the employment of such a device as the "division board excluder," but such queens will not truly compare with those bred and naturally raised under the swarming impulse, which are undoubtedly the best. Almost all commercial breeders, however, cannot restrict their enterprise to natural methods, both owing to the demands of the market, as well as to the limitation or even absence of profit from being content with incubating on a large scale a small number of naturally built cells.

A good chicken incubator, as in the possession of many of our readers who are also poultry breeders, may be adopted for the purpose, otherwise a biological incubator may be used. We have used one of Hearson's make with great satisfaction.

Owing to the limitation of our space, we would draw the attention of our correspondent to our contribution on this subject to the February and March issues of the **Bee-keepers' Record**, and to a letter due to appear in the July issue of the same publication. We shall be glad, if necessary, to answer further questions.

ROBBING.

Q. Why should the bees rob in the midst of the season when there are plenty of flora about?

A. This is only likely to happen after or during prolonged bad weather, when such flowers to the bees are no more than ornaments, that is to say when the conditions for nectar secretion are either defective, or when such nectar secretion is not retained by the flowers, through the effects of heavy rain. Contrary to the popular idea, some of the bees by mistake or otherwise may enter a hive other than their own, especially in a large apiary, and this affords an opportunity for the information of other bees lacking in stores. Further, any carelessness or a forced urgency on the part of the apiarist in opening a hive (other than towards the evening) during a temporary food shortage in the course of the season, also the careless exhibition of wax and sweets in the apiary, at once increases the inquisitiveness of bees, whose wonderful faculty of smell and their rapid methods of communication are sufficient to ensure the launching of a robbery campaign for some time until favourable conditions for foraging divert the attention of the bees. It is a wise policy whenever possible to satisfy the food needs of every colony. This will at least reduce the chances of the incidence of robbing.

JOINT CASTS.

Q. Why does it invariably happen in an apiary containing a number of hives, that immediately a swarm or cast issues, others issue and frequently join? Why should they join?

A. The conditions governing swarming being more or less common, there is no curiosity in the synchronising of the issue of several swarms or casts. This is more likely to happen on a fine day after unfavourable weather. Casts issuing from the same hive, and therefore being composed of related bees, are naturally more expected to join than to separate, the bees being brought into association by a common call, and when hived as one mass, the spare queens may either decamp with their own followers or may get killed and the worker bees remaining with a single queen and forming one colony.

Casts issuing from neighbouring colonies may join under the impression of being related, Common scent production and the intermixing in the air of the swarming bees with one cause at heart and one call for their voicing, no doubt play the puzzling game.

THE SUPPLY OF EGYPTIAN QUEENS.

Q. I note that Mr. Claridge is advertising in the **B.B.J.** the sale of virgin Egyptian queens. I have already sent you three young queens of even better standard; and as the candy and travelling cages are of the same batch, the queens ought to arrive safely.

I am sending you by this mail a specially bred queen from the most docile colony possible.

Please let me know at once of the state in which she is received, and I hope you have received the other three I sent in good condition. I am afraid I shall be unable to send you any more this season, as the hornets catch nearly all the virgin queens as they leave the hives to mate.

I should like to have your opinion as to what they are worth so as to fix a price for them should there be any additional demand. I shall be able to supply them from March 15th, onwards, and a very few on the first of that month. Of course the ones I sent you are a small present from me, and I shall be happy to hear that you have been successful in crossing Italian virgins with Egyptian drones as I do not think that the other will be any use.

A. We sincerely thank our esteemed correspondent, Mr. H. Helbawy for his courtesy and disinterested support. His kind letter reached us just as we were going to print; and we very much regret to mention that all queens arrived dead, and therefore have been rendered unable to conduct any experiments or to pay off our debt to Mr. Claridge, whose live standard queen is no doubt preferable to our superior dead ones.

We do not find anything wrong with the candy except for a little dryness, and believe that the long confinement in the cages (11-15 days, instead of the normal travelling journey of 5-7 days between Egypt and England) is the main basis of the trouble. Further, we would think it most advisable to employ Italian bees as attendants to the queen, since Italian bees appear to be good travellers. Out of sixty imported American queens, each travelling for three weeks, only seventeen reached us dead. The American type of capacious travelling cage for the exportation of queens is most admirable. It provides sufficient accomodation for the storage of food in four compartments, in addition to ample room for an adequate number of attendants, which should number 30 or more so as to ensure the protection of the queen during such a long journey. We are sending one as a model to our correspondent.

When all these precautions are taken, we sincerely doubt that the mortality on the journey will ever exceed or even reach 5%.

A good fertile Egyptian queen is worth nothing to many beekeepers, who do not care for experimental tests. For the limited number of apiarists who are interested in scientific research 10/6 per queen, including postage, is reasonable, safe delivery being guaranteed.

As to whether the best qualities of the Egyptian race belong to the queen or to the drone it is most difficult to definitely assert without sufficient tests, as there are arguments in favour of both views. We are personally, however, more inclined to the view of our correspondent.

DUMMIES AND DIVISION BOARDS.

Q. What is the difference between a "dummy" and a "division-board?" It is most difficult to arrive at a clear definition from my two bee manuals......

A. Correctly speaking, a **dummy** is more or less a replica in wood of an even frame with comb. It is exactly of the same outside dimensions and thickness; and is meant to replace the latter. A true dummy, to be strictly correct, should be double-walled, but this form of accessory hive furniture does not exist in numbers on the market, except in the developed form of the Doolittle or **Dummy Feeder** (for the illustration and description of which consult any leading text book), being usually replaced by a board of equal external linear measurements.

A **division board,** on the other hand, should be of such dimensions and shape as to be capable of insertion between and parallel to the combs in the same way as a dummy, at the same time being capable of complete division of the hive chamber in which it is inserted.

It will be seen therefore that a **dummy** permits of the creation of a bee space in the same manner as a framed comb does; whereas a **division board** entirely obliterates such a space by being made to touch the internal surfaces of the front and back walls of the hive (in addition to the floor board, when employed for the brood chamber, as is generally the case.)

SURPLUS B. C. HONEY.

Q. This Oxfordshire district is rather an early one; and at times, especially during the present favourable weather, no less than four combs in a ten-combed brood chamber, become loaded with fine and pure capped honey. Following modern teaching, we give the queen more room by supplying frames fitted with wired foundation; and we break the surplus honey combs for sale after pressing. We get two shillings per lb. Would you suggest a more paying method, other than extracting, which is rather troublesome and have not the time for? I may add that although the season here practically ends early in July, we take care to leave sufficient food for our bees, although sometimes we are obliged to feed.

A. We feel certain that with training, the simple procedure of extracting honey is both more economical and less troublesome than the destructive process of pressing. Whatever the number of combs that need extracting may be, it is merely a question of good organisation and equipment or otherwise that would render the task a pleasure or a nuisance. Breaking and pressing good honey combs can hardly be termed a modern practice.

As for relieving the brood chamber of excessive stores we would advise you either (1) to extract the surplus honey and return the empty combs to the bees; or (2) to store the capped combs of honey for your own bees' future needs, should the necessity arise; or for sale for bee-feeding to needing apiarists, each standard comb obtaining no less than 15s.; or (3) to start an additional lift, placed uppermost, with these capped combs, and to remove only the surplus shallow frames or sections when capped, so that the bees may have always at their disposal good ripe honey for transference to the brood chamber during the prevalence of bad weather.

SUBDUING BEES.

Q. What do you consider the best method of subduing bees?

A. It depends on the occasion. The smoker is undoubtedly serviceable on many instances, and the reasons for its effects are traditionally explained in every bee manual. In no few instances of perfect "bee weather," bees need no subduing, even in the hands of the crudest amateur. The smoker may be employed as the regular subjugator, provided it is not excessively used. The guards at the entrance, for instance, need not be driven to the top of the brood chamber by a big volume of smoke, only to start a fighting campaign.

It is most advisable, when manipulating, to use a **manipulating cloth,** whether impregnated or otherwise with the odour of carbolic acid, "Yadil," "Izal," "Lysol," or the like. The main reason for its employment is to cover those combs that have already been examined or have yet to be investigated, leaving uncovered just one or two combs due to be immediately removed out of the hive for inspection. In this way the annoyance and excitement of bees is much overcome, and the task of manipulation becomes a real pleasure.

When the smoker (whether employed for ejecting smoke or chemical odour) fails, and the subduing cloth is not serviceable, the **sprayer** generally succeeds. A warm solution of a non-poisonous antiseptic is ideal for the purpose, as it serves a double function. We generally employ this method as a routine with satisfaction, and only on rare occasions do we care to use the smoker. The effect of the sprayer is to immediately disable any vicious bees and to divert their attention to their toilet and to the treatment of their disablement.

In unfavourable weather, even the weakest nucleus of bees are often capable of launching a big battle on the slightest provocation and generally in spite of almost all methods of subduing. Manipulation under such circumstances should never be attempted except in urgent cases, as it is sheer murder of bees. Their semi-drowning at the great risk of chilling the brood would be the alternative for securing their thorough disablement in bad weather.

REVISING THE STANDARD COMB.

Q. I read with great interest your arguments in the **Beekeepers' Record** in favour of revising the present standard comb, but don't you think that you have rather over-estimated the measurement which you recommend ?

A. We have recommended no special measurements, but merely indicated what may be termed **maximum** dimensions, and we clearly pointed out the advantages and disadvantages of the suggested revision. The heavy weight, for instance, is admitted ; but this is a matter of detail. Smaller measurements present no difficulty for selection and trial. We emphasised, however, the **shape** of the comb, in order to safeguard the clustering bees from **avoidable starvation,** as explained in the article to which our correspondent refers.

We strongly believe in the **metal comb** as the future larder and nursery for our bees. It could be made by the manufacturers in any shape desired, including our present standard comb, and our suggested comb. Employing aluminium of sufficient thickness for the purpose will obviate the disadvantage of a **deep and capacious** wax comb, which is bound to be rather inconvenient for manipulation in case it happens to become mis-shapen.

It is useless to merely think of introducing a comparatively large and deep frame without thoroughly considering the winter demands of the bees.

To show that we have not exaggerated the possibilities in the near future of the metal comb development we would quote for the benefit of our readers the following passage from the current issue of THE WESTERN HONEY BEE : "The Aluminium Comb Co. has been making 800 combs per day and expects soon to increase its production to 1,500 per day. The HONEY BEE has brought them orders from New Zealand, Scotland, and China, while various foreign scientific societies and even the Japanese of Hawaii are enquiring about it." A progressive step needed is to manufacture this comb, according to a careful calculation, in a new correct shape, and not to adapt it to present forms.

HONEY IMPORTS.

Q. What is the monthly value of recent honey imports in Great Britain ? Is it possible for British beekeepers to supply the demands of the market ? Is foreign honey really worth the trouble of importation ?

A. From a return supplied by the Statistical Office of H.M. Customs for last month, we learn that the registered value of honey imported was £94,001. A good deal of the honey imported from abroad is used for medicinal and manufacturing purposes, whilst part of it is sold for table use under various designs. In our Press Review Section it will be seen how great care is exercised by the New Zealand Government, for instance, in ensuring that a good standard of honey for exportation shall be maintained. We believe that the adulteration of honey is more exercised after its delivery to wholesalers than before its shipment.

Foreign honey under present conditions is indispensable, because of its cheapness. On the other hand, good British honey will never fail to find a market for it, even in the face of the present comparative apathy towards the education of the public as to the rich dietetic value of pure honey, and its excellence as a wholesome food to all human beings,

There is not the slightest doubt that there are hundreds of acres of land in Great Britain rich in natural flora, the nectar resources of which cannot be exploited for no reason other than the great shortage of bees, and the absence of serious enterprise, which is due to no small extent to the prevalence of disease and the comparatively limited output of reputed apiarists.

ITALIAN BEES.

Q. Are Italian bees obtained direct from Italy superior to those bred at home ? Who are the best Italian breeders from whom a supply of good queens may be obtained for autumn re-queening ?

A. We cannot answer the first part of your question in the affirmative. We would advise you, however, in case you are unable to secure good Italian queens from reputed home breeders, to give at once your order to any leading Italian Apiarist. Signor Enrico Penna of Bologna, Signor Gastano Piana, of Castel San Pietro, near Bologna ; and Signor Enrico Bozzalla of Novara, Crevacuore, Italy, are still advertising. You should not delay re-queening till such a time in the autumn as you will not get a sufficiency of the autumn progeny of your selected new queen, before the incidence of bad weather, that is, unless you are not exactly dissatisfied with your present bees but merely want to introduce in advance an active young mother for early breeding next spring.

Q. Is it true that Italian bees are immune to I.W.D. ? Our bee expert is of this opinion, and others seem to agree with him. If so, why should'nt we over-flood the country with Italian bees and get rid once forever of this plague ?

A. Pure Italians are credited with at least partial immunity towards this disease, yet we have known them sometimes to succumb to it ; and have also known other strains suspected of susceptibility to resist the disease. The credited immunity of Italians is probably due to the great care given to their selective breeding, since their good features have attracted early attention. On the other hand, well-bred native and crossed bees exhibit no less resistance and sound health. Therefore, considering that every strain has its own merits the wisest policy is to reject inferior bees (whether Italian or otherwise) and to select any strain commercially required (e.g., natives for section honey) from conscientious apiarists of knowledge and position.

It will take many years with active work to propagate the Italians in this Country, considering the great predominance of other bees. And at the end it is most doubtful that this will be found a better course than concentrating our attentions on eliminating the unfit and supporting the sound, irrespective of colour or name.

BEE LITERATURE.

Q. I used years ago to read THE RECORD but stopped its delivery when the ravages of dysentery made bee life here non-existent. Since I re-commenced with beekeeping three years ago, I have been so busy at the P.O., that I have had no time to think of interesting myself again in reading any bee publication, until I learnt from you of the proposed issue of THE BEE WORLD, which you have been good enough to suggest its free reading in your Club. Can you recommend to me an additional inexpensive bee journal for regular study ? By the way, which party do you stand for ?

A. We do not know of the existence of any inexpensive bee journal ; but we know that the total annual subscription fees to **all** the present bee publications in this Country (namely, THE BRITISH BEE JOURNAL, THE BEEKEEPERS' RECORD, THE BEEKEEPERS' GAZETTE, THE IRISH BEE JOURNAL, BEE CRAFT, and THE BEE WORLD) do not represent more than a fraction of the subscription fee to the cheapest daily newspaper, which is finally consigned to the waste paper basket. THE RECORD still appears in as good a form if not in a better form than before, and all bee publications are sold at ridiculously cheap prices, principally for the sake of popularising beekeeping. In the case of THE BEE WORLD we know that it is sold **below** cost price, and at best, we do not hope to make any financial gain from it. We feel sure that none of our colleagues look upon their literary work other than a labour of love, maintained for the sake of advancing bee culture. An effective support is due therefore to **all** of them from the beekeeping community, which we regret to record its insufficient support, otherwise British bee publications should never have continued to be of smaller scope than American publications, for instance.

So far as we are concerned, our service to British bee culture will be mainly in the shape of unifying efforts and not in creating new parties, and of removing misunderstandings and harmful differences between different sections of beekeepers, apart from rendering any humble educational service in our power. We do not stand for the interests of any section, but generally support the progressive interests of bee culture as a science and a profession, and we sincerely aim at a liberal press, and at recording what we and our correspondents truly believe but **not** what others would like us to insincerely believe ; and yet at the risk of pleasing no one !

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their party or school, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

Vol. I. No. 2. JULY, 1919. Monthly; 2/6 a Year.

Editorial.

Thanks! To the many friends and colleagues in this Country and abroad, who have been so generous and kind in presenting us with such delightful and fragrant bouquets, which we most happily treasure, the Editor of THE BEE WORLD tenders his grateful thanks.

For sharing their noble feelings, for meriting their liberal encouragement, and for the assurance that we have succeeded in realising the aspirations of so many hearts and minds, our experiment was certainly worth a trial.

At least a special complimentary number would have been needed to record the messages received, most of which are not devoid of moral lessons or of interesting references; but we prefer to use our space for a better purpose, and we trust we may be forgiven for this decision, which is not in the least meant to depreciate our estimation of a genial support and kindness.

On the other hand, we may be pardoned for a different reason to refer to one or two special communications.

From a well-known British apiarist and journalist we learn that " we need have no fear of the success of THE BEE WORLD if No. 1 is a fair sample, unless of course beekeepers as a class are absolutely uninterested in anything."

Our only disappointment in principle has been our entire inability to attend to the editorial work except under circumstances of ill-health, over-work and worry, and therefore the better standard that could have been attained has never been reached; and, in fact, no special effort has been attempted; the more therefore is our appreciation of the goodness and spirited support of so many readers and writers, amongst whom we have been greatly honoured by the patronage of no few leaders and pioneers.

Yet, shall we record—and why not?—that we have also been favoured with two serious complaints...........One is shared by a few readers who have been unfortunate enough to pay a postage surcharge for their copies which they naturally resented. May we assure them that not a single copy of the **Special Peace Number** of THE BEE WORLD, including the wrapper, has weighed over two ounces, and that our periodical in spite of its being a monthly publication, has been unnecessarily registered as a newspaper. We have used just the right stamp; and the paper could not have over-weighed the two ounces, unless damp storage at the P. O. has been practised. When, for the sake of educational propaganda, THE BEE WORLD is disposed of at 400 % **below** cost price, and is **not** intended at any time to be sold by the Publishers above cost price, it may be taken for granted that such a mistake could never have been intentional, and we repeat our assurance that it is far from being our own.

A certain number of readers—who evidently have no knowledge of journalism—expected the issue at once of a large-sized publication comparable to the best established foreign bee periodical, and this at an annual subscription fee of half-a-crown.........! In our opinion, there is no reason whatever why an International Monthly of this scope should not be realised. We have great trust in the practical, technical, and literary ability of our contributors; hence it is merely a question of finance.

It is a fact that every community gets the Press it deserves. We believe that the British Bee Community can establish a still better Press (both by supporting old publications and by issuing new ones) if only activity would replace indifference. Otherwise how can any educational scheme satisfactorily develop without the support of those most concerned in it, and especially in the traditional absence of a Government educational grant? We have been strongly advised to enlist the support of the Educational Authorities, as well as of the Government Food Production Department; but we candidly believe that before we can afford to waste our time on official communications, which are generally non-productive, we have to await the realisation of the liberal promises of the Profession and the results of our appeal. We calculate that for the establishment of even a modest educational scheme of research and instruction, as aimed at by **The Apis Club,** at least 10.000 additional members from Great Britain and abroad are needed. Will you induce friends to help? Will you convince the conservative section of the Trade that their duties to the Profession are not merely commercial? Will you bring before those who believe in " the great need in this Country of a progressive and scientific bee magazine " our humble efforts, which we are anxious to multiply, although THE BEE WORLD in its present shape can safely claim being the largest monthly bee publication in Great Britain, both in size and in the variety of subjects, which no doubt suit the tastes of every section of the Bee Community, to judge from the remarks of our readers including the humblest cottagers? It is a simple matter to offer destructive criticism, can you offer any constructive advice? If you are unable to render any substantial assistance to effect greater improvement, can you induce others who are able to do so?

If, in spite of the delightful messages which have accumulated before us the adequate support of the Profession cannot be secured, we have simply to consider that our efforts are premature; and although the quality of perseverance would not be an advantage under such circumstances, we shall fully adhere to it until we become convinced of the complete hopelessness of our task.

Re-Queening.

As more than being the mother of the colony, the Queen Bee deserves our keen attention. She is the potential life of the stock, their spirit of hope, and the best indicator of their prospects.

Scientifically, commercially, and educationally considered **now** is the time to review her "balance sheet," and to estimate the extent and the quality of her contribution to the welfare of her workers. If she is not worthy of survival now, she will **never** be worthy of survival in the future—and her progeny will not be fit to endure the hardships of winter. Therefore do not hesitate and make up your mind at once to enforce her abdication. The fashion of the time at present is to import queens and almost to ignore the finest of home production; or, failing a supply of the former to rather endure the championship of old queen bees, as the lesser evil of the two, than adopting home-bred queens. But why follow such a blind policy when first-grade queens are still available here, although most noted breeders are overwhelmed with orders. What about the Simmins strains and others of equal standard? It is absurd to advocate such a hypothesis as the total immunity of pure Italians and the susceptibility of all other strains to I.W.D., or the view that it is advantageous to introduce "**new blood**" in the apiary, when such "new blood" may have been the worst example of "**in-breeding.**" There is no advantage in safe guarding yourself against "**in-breeding**" in your apiary, and yet introducing it from outside.

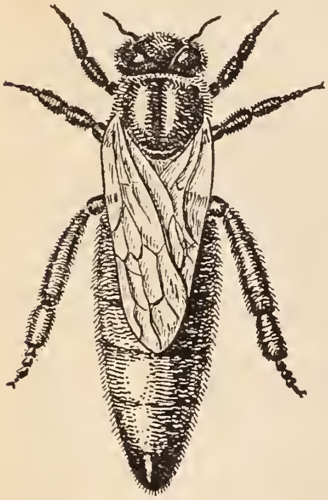


Fig. 3.

Young Fertile Queen in her zenith.

Note the perfection of her wings, the abundance of fluffy hairs, and her well-formed and full constitution.

Aim at a high standard of quality and not a fancy of colour or a loose name. Quality is more economical than cheapness.

The Spirit of Distrust.

To judge from the correspondence in the columns of the Bee Press alone, there is a form of trade in bees that cannot be permitted to continue for long without seriously jeopardising the dignity and the interests of the Profession. The wide-spread trade in diseased bees, the supply of goods of an inferior standard than advertised and the like, are common complaints from which both novices and experienced men are badly suffering and almost to an equal degree. Those who commit such acts are generally non-members of the Trade proper, although the latter are bound to suffer for the pretences of the former. These constitute the established class of profiteers, who give their mongrel and often sick bees no attention, who never care to possess or know how to conduct an experimental apiary, who practically incur no appreciable expenditure even on canvassing, and yet who over-charge for their hopeless goods and pretend to be genuine traders, thus injuring the reputation of the Profession. Every standard of quality has its price governed by the cost of labour and of research work, unless the extent of production is such as to justify an appreciable discount.

It is a vital matter for the Trade therefore to watchfully protect their reputation and interests, and to do their utmost to cultivate amongst their customers a genuine feeling of confidence in place of the prevalent and highly regrettable spirit of mistrust. It is also the duty of the Bee Press and of experts to Beekeepers' Associations to protect the average beekeeper by their advice and judicious publicity.

The Sugar Problem.

In previous years we were faced with an actual scarcity of bees. This year we have been confronted by a comparative shortage on account of the ever-increasing demand. The Food Production Department of the Board of Agriculture is undoubtedly responsible in a large measure for the greater popularisation of beekeeping in this Country and it remains to be seen whether they will give the educational movement their support or otherwise. Their logical duty is that they should do so, now that bee culture has been recognised as a respectable national industry worthy of further encouragement.

A splendid effort at breeding has been attempted this year; and although being far from adequate, nevertheless a good number of stocks have been raised, and naturally require feeding during bad weather, apart from the necessity of supplementing their natural stores before wintering.

A careful review of the season so far, in various parts of the Country, reveals that in **early** districts the honey harvest has been satisfactory. In districts depending for their returns mainly on white clover and lime it has not been so, on account of the unfavourable weather during the latter part of June and the earliest part of July. It is possible that the heather harvest may be good or that districts with a prolonged flow may compensate now for loss. But it is clear now that everyone has counted too much on English weather, and had been deceived by the fine weather in May which finally created a drought to have been followed by prolonged unfavourable and rainy weather.

Of one thing we feel certain this year, namely, that a good number of beekeepers will need feeding their bees. We do not consider this a loss if they can build them up strong enough to winter and to reap the benefit of their investment next spring. Unless an exceptional natural supply is available, it is clear therefore that feeding (stimulative to begin with) should be carried out immediately. It is a great mistake to delay feeding till September as generally advised. In the majority of instances it should be done earlier without at the same time discouraging breeding, side combs that become filled with capped food should be removed for storage until it becomes advisable to limit breeding, when these may be returned to the hive in place of unsuitable combs, otherwise given to more needing colonies.

Eight pounds of sugar per colony for stimulative spring feeding may be sufficient for the average beekeeper, an exception being the case of the commercial breeder, but as for late summer or autumn feeding anything less than 20 to 25 lbs. of sugar per colony will mean the inauguration of a massacre campaign, as was committed in the autumn of last year through the delayed and inadequate supply of bee candy. We can hardly believe that the Government, after ultimately deciding to foster the industry, will now leave the beekeepers to face the deadly peril of their bees dying or decamping through starvation. It is obvious that the rationing scheme should be started at once, and the choice left to the apiarist to feed when he considers this advisable, instead of dictating to him.

Literary Prize Competition.

The first edition of the **Special Peace Number** of THE BEE WORLD was exhausted three days after its issue, on account of numerous applications. As many applications were still coming it was difficult to decide on the best course to follow in view of the heavy cost of printing. On the other hand, considering the announcement in the Bee Press of our Literary Prize Competition, for which it was fixed that entries close on July 30th, we had at the eleventh hour to decide on issuing a second edition of our first number, so as to facilitate additional entries, and, further, the final date of entries was altered to August 6th.

To our gratification in a sense the second edition is already nearly out of print. We beg therefore the Secretaries of Beekeepers' Associations, to whom THE BEE WORLD has been despatched, to kindly give facilities to interested members in examining the June Number.

The prizes offered are in each case an **Adminson selected and tested fertile queen**, together with the free delivery of THE BEE WORLD for one year for the best critical review of Jarman's article on " Honey Production and Swarm Control," also for the most able article on " Reconstruction " in view of the Government's policy for re-stocking and for the resuscitation of bee life in this Country, also in view of independent efforts. The article on " Isle of Wight Disease and Dutch Bees " in our June Number merits special consideration in this respect.

J. Herrod-Hempsall, Associate Editor, THE BRITISH BEE JOURNAL, has added to our obligation by kindly accepting to act as Referee. We intend to make these Literary Prize Competitions a regular feature of THE BEE WORLD.

The Nile Crusaders.

We have received two interesting letters from F. M. Claridge on his experience with **Apis Fasciata.** We were on the point of summarising his communications when we heard from him that he will shortly present us with a resumé of his investigations. Through his courtesy we have been able to examine the original queen and bees. When received and hived, the temperature was rather low (approximately 54° F.) but the bees were quite peaceable as may be expected after their confinement. They were also manipulated at a temperature of 68° F. and proved most docile. Some of the witnesses who were present during the management were Miss N. E. Atkinson (who shared in their manipulation), H. S. Manzalaoui, Walter H. A. Keyte and Herbert Biggs. They were in fact handled with complete immunity, and hardly any smoke for subjugation was necessary. *

On the other hand, at a temperature exactly 10 degrees below the latter (i.e., at 58° F.), they proved to be terrible crusaders...........

A colony of pure Italians that are used as Control proved just as bad—if not worse—under similar conditions.

The bees are progressing splendidly, both in foraging and breeding, and having preferred not to shake their native coat of dust from the Egyptian deserts, they still maintain their beauty. They can also claim, as we have always noticed, a distinct tremulous and sharp flight note.

We have not yet been disappointed with the excessive building of queen cells, which is supposed to be one of their greatest failures.

Odds and Ends Concerning Bees

Our able contributor, Richard Whyte, whose delightful chatty writings bear the testimony of wide knowledge and experience, apart from literary mastership, has been good enough to promise regular contributions to THE BEE WORLD on such interesting subjects as may be gathered from his first instalment published in this number and dealing mainly with the stingless bee. We are sure his fascinating " Odds and Ends " will be always followed by all our readers with the keenest interest.

Original Contributions.

ODDS AND ENDS CONCERNING BEES

WILD BEES AND WILD HONEY.

By R. WHYTE.

In my Diary of Odds and Ends in connection with bees I came across some notes regarding honey which I think will interest readers of THE BEE WORLD.

We have all heard of the Attic Honey from Mount Hymettus, gathered, it is said, from wild thyme, and the no less delicious rosemary honey gathered by the Punic Bees of North Africa. Rich as

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(*) The same bees were further manipulated by several distinguished visitors to the **Research Apiary** of **The Apis Club** without taking any special precaution whatever. Among these examiners may be mentioned Robert Lee and E. F. Ledger.

these honies are in ambrosial qualities they must take a secondary place when compared with the honey I am introducing you to.

The Transvaal district of South Africa during an extreme drought, if viewed by British Beekeepers, would not be considered an ideal country for bees, and yet when the mealie lands everywhere are parched and desolate and the cracked earth baked hard the Bee Hunter's heart rejoices. In this part of Africa it is a fact that wild bees' nests are never so rich in stores as during a severe drought. Why this should be I cannot explain. Orchids, Syringas, Hypoxis, etc., steadily refuse to flower. Acacias seem to be the only exception in the vast expanse of desolation. These trees start blooming but always the blossoms get parched and fall to the ground before pollination can take place. After each little shower they burst into bloom ineffectually. Some seasons this happens four or five times during a season. During these transient blossomings the spectator is amazed at the immense numbers of bees there are. As far as the eye could discern the Veld was georgeous with these bright yellow powder puffs and each tree hummed with the song of bees from morn till night.

Hunting for honey in the Veld would be barren work indeed without the assistance of the honey Guide-bird (Major indicator). This bird has developed a positively uncanny knack of guiding the searchers to where the poor bees have their stores. In the Transvaal there are two kinds of honey stored by the common bee, the ordinary golden yellow known the world over and another which is absolutely white honey, white as driven snow with a pleasing aroma and fragrance peculiarly its own. When expressed from the comb it almost immediately solidifies like pure lard, in fact one would take it to be pure lard. The Dutchmen of the Veldt call this "Sheeptail fat honey." This honey is found in the two middle Velds. The whiteness is said to be due to the bees working on certain grasses and never visiting flowers at this time. The honey is generally taken from hollow trees, sometimes in ant-bear holes or hollow ant hills. This honey is much sought after on account of its beautiful appearance and exquisite flavour as well as on account of valuable medicinal properties it is supposed to possess, often there is a considerable yield of this honey. The most ruthless and persistent enemy of bees in South Africa is the Honey Rattel, a species of Badger; this animal works also in conjunction with the Honey-guide, and after eating the honey from a hive leaves to its feathered assistant the combs filled with brood, which is said to be the part of the plunder most valued by the bird. The honey is collected and stored in tanned Antelope skins. The skin is taken off the animal without being cut up the belly, and when drawn off is similar to the wine skins of Spain. After tanning the skins are turned inside out and thoroughly cleaned with strong soap. When once thoroughly saturated they become jet black and strongly diffuse the sweet fragrance of honey.

It is said to taste honey in perfection the House Frau must open for one's enjoyment some special bag of "Sheeptail fat" honey that has been kept carefully stored for several years. It is an experience that will dwell long in the memory of every lover of good things to eat.

Delicious as the foregoing honey is, it must yield place of honour to the product of the little stingless Moko Bee. Among Beekeepers generally so little is known of the Moko that they are apt to consider an account of a stingless **honey bee** as a fanciful tale. Moko bees are of two varieties, one kind is extremely small, being very little bigger than gnats, but they are none the less true honey bees. The other variety is considerably larger. In their ways generally they resemble the common honey bees, with the exception that they possess no sting. The protection of their nests depends not at all on their fighting qualities but on circumstances more effective. The larger Moko builds its nest in the ground. In making their nests they select the hardest soil to be found ; in the almost impenetrable earth they commence operations by boring a vertical shaft somewhat the diameter of a pencil, varying in depth from two to five feet. At the bottom of this shaft a hollow is formed which they increase as the needs of the colony demand; in this underground chamber is stored the honey. In the plan of the hive and the method of breeding the Moko bees differ from the common bees. The honey is stored apart from the brood comb in little bags about the size of a large thimble. These are cemented together with wax until a cluster has been formed about the size of an orange, when they are again covered by an outer covering of wax. As soon as one such bag has been finished another is made, until there are a series of them with the necks all converging towards the shaft and the bottoms swelling out into the hollows.

Between these bags ordinary combs are made—much smaller of course—and these contain no honey. The combs are packed between the honey bags one on top of the other, separated at the corners by small pillars of wax. Here in the centre of her domain the Queen dwells. At the exit of the shaft a tiny chimney of propolis is made to keep out dust, grit and water from the colony. Stingless though the Moko bees are they are well protected against all honey thieves. The honey guide never leads to one of these colonies and the rattel, after a few futile scratches, gives up the attempt to reach the honey imbedded in the rock-bound earth. These scratches of the rattel frequently disclose to the honey hunter the presence of these Moko treasure houses of incomparable honey. Moko honey differs widely from ordinary honey in flavour and I do not think there is anyone who has tasted it but will give it the preference. The ordinary taste and fragrance of honey are there but it has in addition a pleasant acidity which completely does away with the cloying sweetness of common honey. In cases where there is a constitutional antipathy to honey this honey can be taken without any disagreeable after effects. Like the white veld honey it also has the reputation of possessing many therapeutic properties, especially in certain female ailments, and is on that account highly valued.

When once the nest of the larger Moko bee has been located the **modus operandi** is simple enough, though real trouble is the hand-digging necessary. The hunter, when on favoured ground, towards sunset lies flat on the ground facing west. When the bees are at work they form a whirling cloud above their tiny chimney; against the glow of the western sun the honey-hunter detects this little cloud and then the fate of the colony is sealed. In digging out a long twig is inserted down the shaft so that the honey-hunter can follow the direction of the shaft when the soil is loosened by digging.

The yield from these nests varies greatly, anything up to two gallons being obtained. The hunter is satisfied if he gets two or three pounds. The smaller variety of Moko builds its nest in a hollow tree, trees of the hardest and toughest wood being used. On a hot summer day these tiny bees will settle on one's hands and face in search of moisture. About two tumblers full is about the most honey these nests yield. It resembles closely in every respect that of the larger Moko. The small Moko is easily managed when one saws out their nest, and they seem to appreciate the presence of man. They will settle in large numbers on one's hand in search of sugar or syrup. To watch their labour among the flowers is a real pleasure. So greedily do they tumble from one calyx into another that they are soon covered with pollen, and the stream returning to the hive resembles tiny balls of yellow afloat in a current of air.

A PLEA FOR BETTER BEEKEEPING.

By H. E. C. CARTER.

Let us aim at something higher than merely the collection of surplus honey, in our craft.

The subject is so wide that all may find some interest in its pursuit, and the deeper our interest the larger our gain both in knowledge and pocket. It should be remembered that Beekeeping like any other craft must be learnt, and that the only school is experience.

In our rambles through the country we find that bees are kept in various ways. First we have the row of skeps under a wall, many very old and dirty, covered with sacking or even old clothes; in rare instances we may find inverted crocks or tin basins over each skep. These are allowed to swarm as they like, the swarms are hived in skeps or boxes and added to the row. At the end of August the heaviest are selected for destruction (this is generally described as lifting the bees), the bees destroyed over sulphur fumes, the combs cut out and the honey drained and pressed from them. The combs are then soaked in rain water and mead made from the liquor drained off. The old skeps are retained year after year for the use of swarms, till they fall to pieces.

Most suspicious are these old fashioned beekeepers, one hardly dare look at the hives, let alone examine them. If disease breaks out, neighbouring beekeepers working on modern lines are blamed for introducing new fangled notions.

It is amazing how hardly these old methods and superstition die, and at the same time what a poor return is obtained.

An instance occurred recently, with reference to the purchase of some swarms. It appears that there is an old superstition that

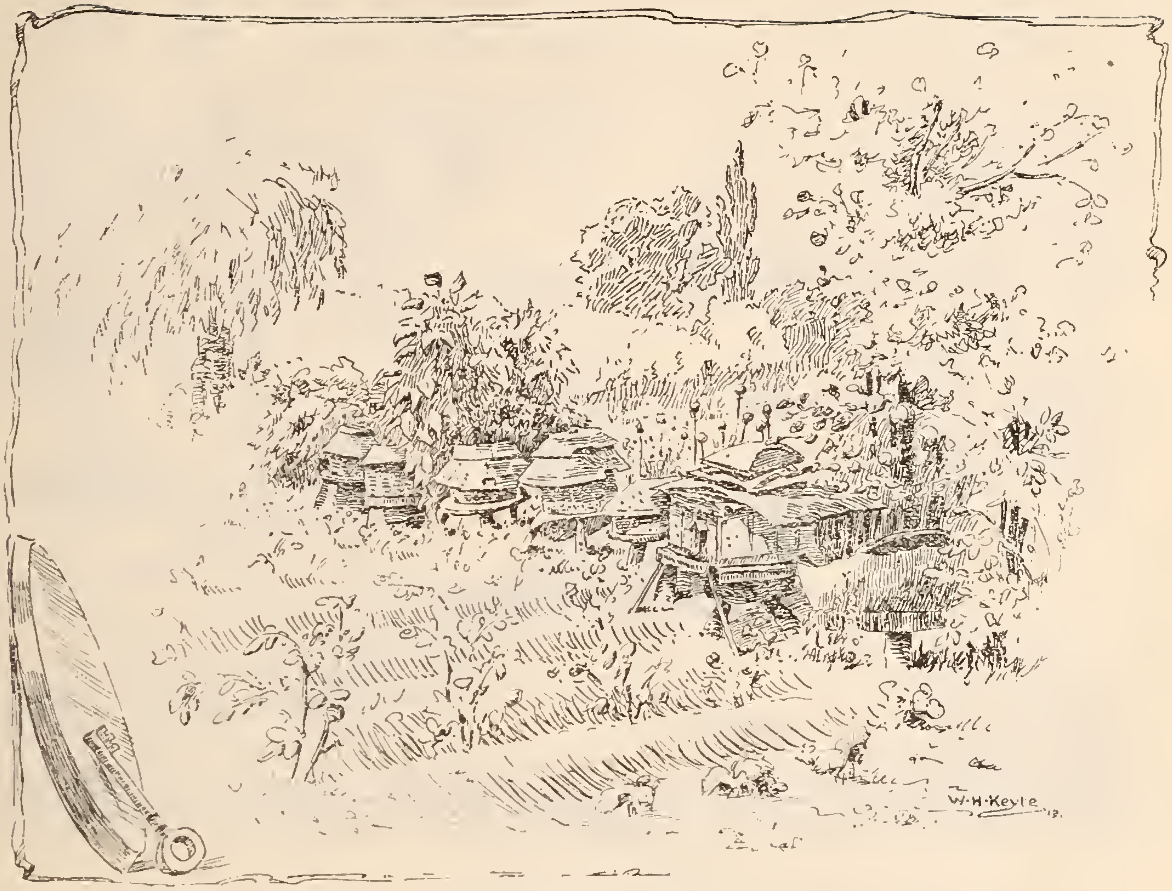


FIG 4—THE OLD METHOD.

A quaint skep apiary of many years standing at Benson, Oxon.

The symbolic key and tin pan are shown in the foreground. The Skeps are inaccessible from the back on account of a close hedge, apart from the rich display of artichokes and onions. They are almost equally inaccessible from the front on account of a prosperous allotment of potatoes and cabbages These had to be imaginarily cut out of the drawing for the sake of clearness. A unique feature of the apiary is the use of a wedding cake box as a semi-observatory hive. Almost any non-serviceable article in the farm is found practicable as an everlasting cover for the charming bee home. It is a credit to the apiarist and to the bees to manage such a business.

unless gold is paid for bees they will die or go away, the seller was doubtful about accepting treasury notes for the swarm.

A younger or more enterprising beekeeper of the above stamp is prevailed upon to try a modern frame hive; he obtains the hive and according to directions places a swarm therein, and leaves it severely alone. Later the bees find their way into the roof, build combs and fill with honey. The owner is unable to dislodge them and finally in disgust sulphurs the lot to obtain the honey. This actually happened in the writer's experience.

The next class certainly is in advance of the previous, and is composed of those who use frame hives, but treat the brood chamber as a sealed book, place on supers and expect swarms as well as honey. If the bees swarm they get little honey, if they get honey there are few swarms. There is no control of swarming; in fact, swarms are expected.

Then we have the beekeepers who work on advanced modern lines, control swarming, and obtains fair returns of honey. Here the chance methods of the former classes are swept away. Beekeeping becomes a profession. If certain courses are followed certain results are expected, and all things being equal are attained.

Beekeepers of this class aim at honey production and healthy stocks, knowing full well that unhealthy or weak stocks are useless.

To anyone who intends to start beekeeping, the best advice is follow the methods of this last class, and on no account listen to those who keep bees in skeps "Because their fathers and grandfathers did so, and skeps are the proper (!) homes for bees." Let him or her obtain a good guide book, study it carefully, attend lectures on the subject, making full use of question time, get in touch with a beekeeper experienced in modern methods and visit his apiary. Then acquire a modern hive, examine it carefully, and obtain either a swarm or good nucleus in early summer from a reliable source.

Under the guidance of an expert the beginner will rapidly acquire confidence and ease in manipulating as well as a knowledge of the natural history of the bee.

The book of nature will open at some of its most wonderful pages, as the novice watches the busy worker leaving the hive, diving into flowers in search of pollen and nectar, and collecting propolis from resinous buds. He will be able to increase his knowledge of the flora of the district, by tracing the vari-coloured pollen to the flowers from which gathered. If so disposed he can then with the aid of a good microscope trace the sources of his honey, the pollen grains found therein being a sure guide. The entrance of a hive may be watched and much learnt therefrom of the internal condition of the stock.

In addition to all this there is the satisfaction of knowing that thousands of busy workers are storing honey for their owner every fine summer day.

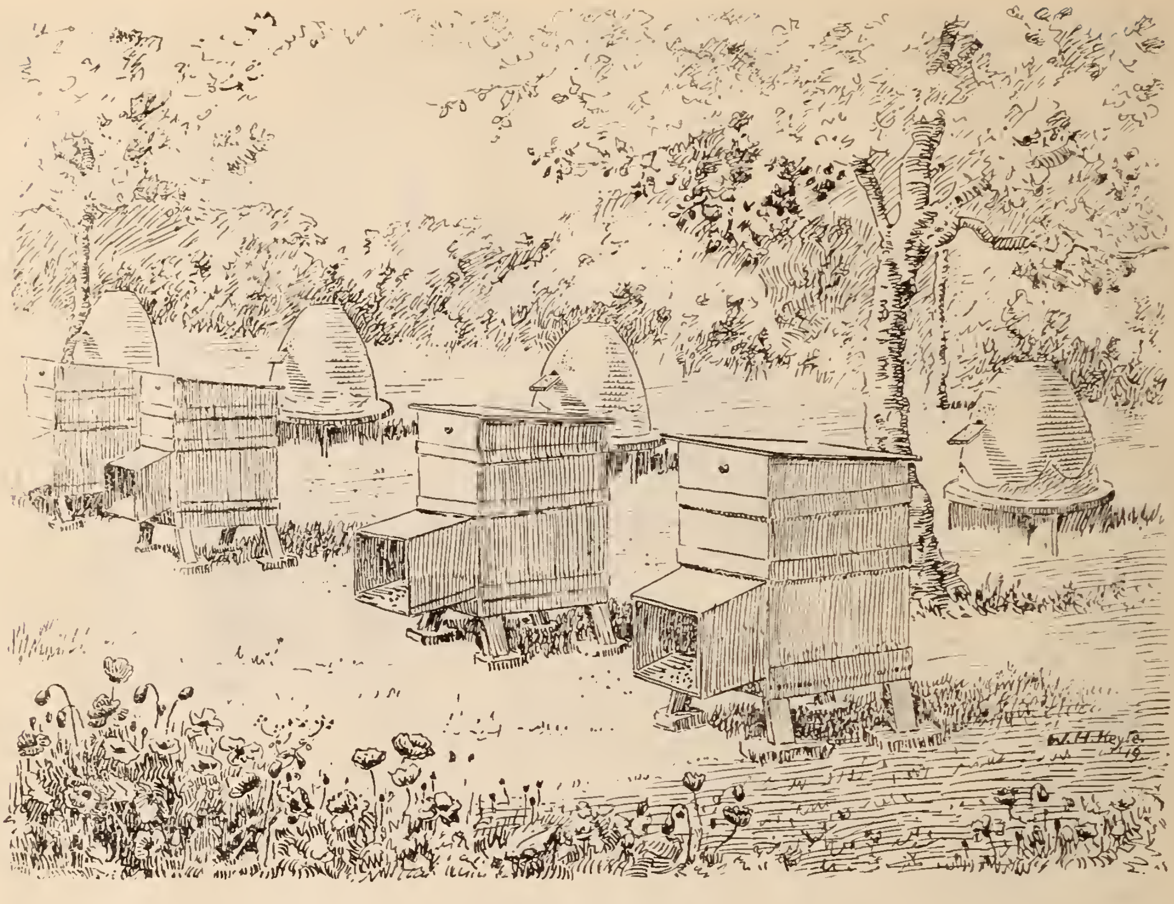


FIG. 5—THE CONTRAST.

A corner of a modern apiary situated about one hundred yards from that illustrated in fig. 4. The detachable combined porch and platform arrangement, which is ideally protective to the flying bees under most conditions, is impressive. The large Dutch skeps with top entrances and platforms are shown in the background. These rest on floor boards supported on X stands. The bases of the skeps are closed with stretched sacking material In summer this is permitted to remain and the floorboard is removed, the skep resting directly on the stand; in this way liberal ventilation is permitted and helps to check excessive swarming. When wintering, the sacking material is not removed and the base of the skep is made to rest direct on the floor board plaster of Paris or the like may be used to form a joint at the line of contact. These skeps are liberally painted without entirely counteracting the valuable ventilating feature of the skep wall. In this way adequate protection from the rain, compatible with a judicious ventilation, is permitted For heat conservation and for other protection in winter a straw hood with a cut in it to correspond to the entrance and platform may be furnished to each skep.

The Press Mirror.

The Beekeepers' Gazette

THE INVENTION OF BEEKEEPING.

By Geo. W. Bullamore, F.R.M.S.

When we see bees being driven from a skep, in order to attract a crowd round the bee tent, we are struck with the mastery which man has attained over these insects, and may well wonder how the discovery was made. But, probably, the whole "art and mystery of beekeeping" owed its origin to a few lucky accidents on which the attentions of others were concentrated. Just as the idle trick of a boy, who whisked a frame of honey, led to the invention of the centrifugal extractor, so the curiosity of the operator when "close driving"—i.e., with the top skep tightly fitting the inverted lower one containing the combs and bees—may have led to a peep at what was happening and from thence was gradually evolved the "open" system of bee driving.

But how came man to start beekeeping, the stings being such a menace? He probably drifted into it without any definite idea of what it was leading to. In parts of Africa at the present day there are natives who, although not beekeepers in the English sense of the word, make a practice of placing decoy hives in parts of the woods where bees are known to abound, and these decoy hives quickly become tenanted by wild swarms. The primitive hunter might well have practised such a mode of obtaining honey, for then he would merely have to make the round of the decoy hives at a suitable time instead of undertaking the more troublesome work of finding colonies in hollow trees, etc. Advancing from the hunting stage to the agricultural stage, the demand for honey might result in decoy hives being robbed by others than the legitimate owners and, as a precaution, they would be brought into the cultivated and protected patch of earth. This would be the beginning of the apiary and, if a proportion of the colonies was saved annually, would be a close approach to the skep system. Hiving a swarm is a comparatively modern operation as we understand it. The system in use not many centuries ago may well have been practised by the primitive man, who noticed how easily the bees could be shaken in a bunch from their hold on the bough. As depicted in the seventeenth century, the method was to place a skep on the ground beneath the hanging swarm, and then strike the tree a mighty blow with a club. The bees fell into, or near, the skep, which could then be turned over and the hiving would be complete. Quite possibly this method followed another, in which all was left to chance after the blow was struck to dislodge the bees. The hive would be on the ground for the bees to enter if they fancied it, and the wielder of the club would be doing record time in a sprint from the scene.

The use of smoke as an apifuge when taking honey is known to many savage races, so that its discoverer must be among the unknown pioneers of the craft. Pettigrew describes how the secret was communicated to his father by an Irishman. The knowledge, therefore, does not appear to have been universal; but without the knowledge the modern frame hive system, or any other depriving system, would have experienced difficulty in making headway at the expense of the sulphur pit system.

Gleanings in Bee Culture

BEEKEEPING ON A BIG SCALE.

By A. E. Lusher.

Few people realise the amount of supplies a large beekeeper requires. It takes from half a ton to a ton of smoker fuel alone for a good season's run and from one to two dozen Jumbo smokers. No, we do not try to destroy smokers, but they just wear out from service. I buy what the junk men call tree wraps for fuel. Foundation in half-ton lots does not last long when you have thousands of new Hoffman frames to fill every season. Wire in two and three dozen one pound spools, and nails by the keg, also sixty-pound honey-cans by the thousand, are a few of the expenses besides six good men. Gasoline and cylinder oil by the drum are also large items with the beekeeper since autos have become so reliable an assistant. But if one can get honey by the carload, expenses do not hurt a good beekeeper.

The Domestic Beekeeper

PRICES FOR HONEY.

By Dr. A. F. Bonney.

The paramount question today is that of the price of honey. What shall we ask for it? What shall we get for it?

If honey producers want to keep the price of honey down, all they have to do is dump their crops on the market so soon as it is in the cans. This is an infallible method to reduce prices, not only with honey, but everything else produced. If, on the other hand, they would stabilise prices, keep the crop off the market awhile. This complies with the eternal law of supply and demand.

To keep it off the market generally means to keep it out of the hands of the middleman. This person may be a necessary evil, but he is with us, and pretty well established.

Now, one way of keeping it out of the hands of the middleman is to retail it yourself, something which takes neither much brains, time, or money.

The Farmers' Gazette

BEEKEEPING AND HEALTH.

From the insurance point of view beekeepers are probably the best " lives." People of impaired health who have taken to beekeeping have frequently astonished their friends—and their doctors—by living to a green old age. Langstroth, the American beekeeper, had not health enough to be a clergyman—and preaching is one of the healthiest occupations—so he became a beekeeper, and lived to be eighty-five! A. I. Root, the head of the biggest bee business in the world, is now nearly 80 years old, and has been married for about 50 years. There are five children, ten grandchildren and a number of the fourth generation. All the descendants live in Medina, Ohio, and all are directly or indirectly connected with the bee industry. No deaths have occured in the fifty years! Dr. Miller, of Marengo, Illnois, the best known beekeeper in the world, was trained for the medical profession, but soon discovered that he had not health enough himself to give it to other people. So he gave up medicine, and became a beekeeper, with the result that to-day he is " 87 years young," sprightly as a boy, and a regular contributor to bee literature. The reason is not far to seek. The beekeeper is engaged in a pursuit of absorbing interest which takes him into the open air, and the sunshine in the finest weather—and only then. There is neither heavy work nor long continued labour, so beekeeping is ideal for ladies, for older people, and for anyone of impaired vitality.—J. A. [We would conscientiously add: "not always!"—Ed., B.W.]

The Western Honey Bee

WEAK POINTS IN INSPECTION.

By a Lady Apiarist.

The beekeepers of this county are also swarming. Some are " up a tree " and some are on the ground, all looking for a bee inspector who burns bees and allows diseased honey to run down the hillside and collect in holes in the ground in his haste to make a safe get-away before the owners' return.

The bee laws need remedying somewhat for the protection of beekeepers, and not to compel them to protect themselves in order to remain in the business. Possibly the object is to freeze out the small beekeeper for the benefit of the large honey producer.

This county has been reported free of bee diseases. Then comes the statement that yards not inspected for two years are " dying off "......Other large apiarists have diseased bees, and say they are not worrying about the disease.

Someone has to be made an example of, by having some bees burned. The result is they are discouraged, and nothing is done for the remainder of their diseased bees. What good has been accomplished?

There is a petition being circulated for the removal of the inspector from office, and the sentiment is all averse to having another bee inspector appointed.

The Canadian Horticulturist and Beekeeper

THE USE OF THE BEE ESCAPE.

By R. F. Holtermann.

The bee escape board is often of as great advantage to the inexperienced and small beekeeper as it is to the extensive beekeeper. Yes, even more so. The novice, as a rule, cannot control bees as well, is more likely to irritate them in handling, and during the robbing season start up robbing. If a man or woman has the apiary close to neighbours, it is much more quiet way to take off either comb or extracted honey by means of the bee escapes. I have had the wire cloth bee escape board under five 12-frame Langstroth supers, and under proper conditions would extract it quite safe to be able to remove the honey 12 hours after putting on......I prefer putting on the escapes in the morning, not at the evening, for the sooner bees can be induced to want to leave the hive, and in that way pass through the escape, the better.

The Australasian Beekeeper

WAX FROM OLD COMBS.

By E. T. Penglase.

I will......give my plan of treating old or deformed combs. We have a large square copper, which we fill with water to reach about one inch from the top of the frame, and, when the water boils, we commence operations by plunging the frame into boiling water, shaking it sideways to make the comb loosen from the wires, then change ends, give a shake or two and the old comb is melted. We continue until we get about 4 inches of wax and slumgum, then let it cool. Result, a large cake of wax, cocoons and slumgum. Next morning remove the cake and repeat until all the combs are done. Then we put a wooden slatted false bottom in the copper and clean water. Then put as much as we can of the wax and refuse into a coarse bag, place it into the boiling water and put another slatted cover on top, let it boil for, say, half an hour, then commence to put weights on top to gradually press the wax out of the bag. Increase the weight as it settles, giving plenty of time for the wax to rise. When you think all is about pressed add some more weight and cover up and let it cool off until next morning.

After treating as above I have sometimes boiled it again, but I never got enough wax out of the second treatment to pay for the trouble.

The New Zealand Beekeepers' Journal

NEW ZEALAND V. BRITISH BEEKEEPING.

......And as regards the apathy of the English authorities to recognise the need of legislation to protect the beekeepers, is our own very much better ? They pass an Act but will not staff the Department to enable it to be carried out properly ; also it needed the resignation of a capable officer, with newspapers and our own Journal and Association to back their claims, for the Government to recognise their claims, for the Government to recognise they were worth a better salary. For how many years have we been asking for a Chief Apiarist, and for the stricter enforcement of the penalties of breaking the Apiaries Act ?

That the Journal has done its part in trying to bring about conditions that would really give us a right to the claim of being in the front rank, nobody can deny ; but until many improvements are brought about, it seems to us we cannot reasonably claim the lead.

The Small Holder

Small Owner and Small Farmer.

WHAT STOCKS TO RE-QUEEN.

It is an excellent rule to retain no queen, except in the case of a mother bee displaying wonderful fertility in a hive, beyond the second year. A third-year queen, if she does not degenerate into a drone-breeder, will very seldom, if ever, be able to cope with the large brood-nest of a moderate hive, and there is always the danger that the bees themselves will supersede her, checking the colony's progress at the least convenient time.

It is by no means certain that because a queen has reached the end of her second season with plenty of fertility she will continue so in her third.

It will be found, therefore, that the two-year rule is preferable, and should be strictly adhered to, with the rare exception mentioned.

The Smallholding and Allotment

COLOUR AND QUALITY OF HONEY.

The best comb honey in sections is clear and bright, evenly worked to the sides and bottoms ; extracted honey should be light straw colour, bright and clear.

Granulated honey should be creamy white, and fine and even in grain.

The **colour** of clover and sainfoin honey is light, as also is that from trefoil.

Honey from dwarf thistles is water white, and cherry, plum, apricot, nectarine, and peach blossoms all make light honey.

Wild thyme honey is rather dark, but that from heather is still darker and of greater density.

As **flavour and density** improve while honey **ripens** in the hive, the shallow frames should be left until all is well sealed over.

Country Life

BEEKEEPING: HINTS FOR BEGINNERS.

By the Rev. T. F. Royds.

It is needless to say that some districts yield more honey than others, and the possibilities in a good one are enormous. Many beekeepers are satisfied if they take 30lb. of honey from a hive in the course of a season, but anything up to 400lbs. can be harvested by a strong stock under ideal conditions. During the clover flow honey often comes roaring in, and you may be caught unprepared if you do not get a second super ready as soon as you have put the first on. As soon as the first is two-thirds full, the second should be put on underneath it. If you have an orchard, you may get a super-full of delicious fruit honey before the clover is in bloom, and a better fruit crop as well. People do not generally realise what a difference bees can make to the yield of fruit trees. Mr. Cowan records a case in California where forty acres of peach trees had been condemned as useless, but bees were introduced as a last resource, and the trees immediately began to bear so well that eventually the branches had to be supported by strong wooden props.

The American Bee Journal

SWARM IMPULSE.

By Arthur C. Miller.

Reproduction by division (swarming) is doubtless an inherited trait of bees, but that an increased tendency to so divide exists and is inherited I do not believe. As an example, the Carniolans are said to be great swarmers. But here we have an Alpine bee, taken from high altitudes, a bee whose constitution is adjusted to a rarified and a relatively cool atmosphere, and we subject it to our lower altitudes and hotter climate. In its native home it has not a reputation for excessive swarming. Is not its swarming habit here due to its reaction to external conditions ? What would be the result if we should take some of the swarming Carniolans of our low lands and put them well up in our mountain regions ? I venture to assert that the excessive swarming would disappear.

Proceedings of Associations and Clubs.

SUPPORTING LEGISLATION.

At the inaugural meeting of the Beverley and District Beekeepers' Association held on May 22nd, the following resolution was adopted : " That in consequence of the serious losses of bees through ' Isle of Wight ' disease in this district, this Association request the East Riding County Council and the British Beekeepers' Association to do all in their power to help forward such legislation as will prevent the spread of this disease."

PROPAGANDA DEMONSTRATIONS.

At the Bournemouth Horticultural Society's Summer Flower Show held on June 24 and 25, two short lectures and demonstrations with bees were given by the Rev. G. Field, of Troop. A small charge of 3d. was made and the proceeds were forwarded to the Mayor's Fund for wounded soldiers. Over 300 paying visitors attended. Messrs. S. Gidlow and F. W. Moore and other members of the society exhibited interesting models of hives and appliances.

It is remarked by the Hon. Treasurer, Bournemouth B.K.A., "that if similar 'side shows,' which are undoubtedly of a highly interesting and educational character, were given by Societies generally at their local horticultural and agricultural shows much may be done to stimulate the revival in beekeeping now taking place in this Country."

REJECTION OF DUTCH BEES.

At the first Annual General Meeting held on May 24, the Carmarthenshire Beekeepers' Association decided to consider in the near future a re-stocking scheme for adoption next spring "as the Government re-stocking scheme had been rejected by the Association owing to the strong dislike for the Dutch bee as a honey gatherer and other reasons."

THE LEGACY OF OLD SKEPPISTS.

At a lecture on beekeeping given by the Rev. G. H. Hewison, Hon. Sec. "Doncaster and District Beekeepers' Association," the lecturer remarked "that through the prevalence of disease there was a very serious shortage of bees all over Yorkshire, and he urged beekeepers to co-operate in their endeavours to keep only healthy stocks. He suggested that disease was possibly the legacy which the old skeppists had handed down through their destroying the strongest and most prosperous stocks when taking the honey."

A SWARM FOR A BEGINNER.

Major C. C. Lord, R.A.M.C., in one of a series of lectures for this season promoted by the Agricultural Education Committee and held under the auspices of the Kent Beekeepers' Association, advised that a novice should begin with a swarm and not with a stock. We may add that if a comb of capped brood is obtainable from a neighbouring apiarist, or if such a comb with adhering bees but without queen is available, it would serve most excellently for more than one reason to render a healthy swarm a secured investment. They could be most easily united to the swarm.

In our opinion a developing nucleus headed by a good young queen is far superior for the convenience of the beginner than a swarm mainly composed of old and possibly over-worked bees (including the queen). Moreover we doubt for this reason again that the former in effect is a more economical investment.

THE POLLINATION OF FLOWERS.

At a meeting of the Sheffield and District Beekeepers' Association held on May 8, George Hayes, of Nottingham, gave a highly instructive lantern lecture on "The Pollination of Flowers." The lecture was a fascinating revelation of the way in which flowers adapt themselves to secure the assistance of bees and other insects in bringing about fertilisation.

RE-STOCKING AT PETERBOROUGH DISTRICT.

In the hands of L. Andrews, Expert to the Re-stocking Committee, Peterborough, the Re-stocking Scheme has been turned from a glaring failure into a complete success. No more than six nuclei of Dutch bees were received on Easter Tuesday and through the wonderful prolific nature of these bees these have been increased to 34 colonies. It is highly suspected that the queens received from Italy were not fertile but virgins, the reasons given being the delay in commencing laying, in spite of stimulative feeding. The alternative explanation is a common disturbing factor, and it is not for us to suggest it. The reason advanced in this case for suspecting non-fertility of the imported queens received is not apparently unreasonable.

The Re-stocking Committee propose to dispose to subscribers this year all over 20 small colonies, keeping the six skeps with their Dutch queens and 14 nuclei headed by Italian and Italian-hybrid queens. The word "Italian" suggests a pure strain. It would be interesting to know by what method of comparative control was this secured in view of the predominance if not the exclusive presence of Dutch drones? Does not this suggest, after all, that at least some of the Italian queens received were actually fertile, but that the commencement of their activity in their new home was discouraged by some obscure factor? It is difficult to offer any critical suggestion without full knowledge of conditions.

PROGRESSIVE RESEARCH.

Great interest is exhibited by visitors to the experimental apiary of **The Apis Club** when inspecting the aluminium combs, the "Hygienic Hive," presenting the latest development in independent hive feeding, various bee strains both pure and crossed, etc. Several distinguished visitors—even from distant parts of the Country—availed themselves of the invitation to the inspection of the Apiary. The colony of pure Egyptian bees presented by Mr. Claridge is specially attracting much interest at present.

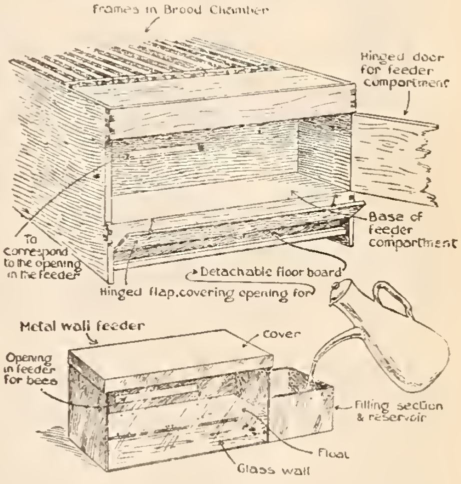

Frames in Brood Chamber
Hinged door for feeder compartment
Base of feeder compartment
To correspond to the opening in the feeder
Detachable floor board
Hinged flap, covering opening for
Metal wall feeder
Cover
Opening in feeder for bees
Filling section & reservoir
Float
Glass wall

Fig 6.

Independent Feeder Compartment and Special Feeder of the "Hygienic Hive."

The simplicity, economy and convenience of queen cell incubation by means of test tubes appears novel and interesting to many visitors. Several expressed the opinion that it will bring queen cell incubation within the reach of the smallholder, who invariably throws away in the dust bin the finest queen cells raised under the swarming impulse. It is far from being within his capacity in the majority of instances to specialise in queen rearing, especially in view of the necessary safeguards against "in-breeding"; at the same time it seems a sheer waste of money to throw away first-grade queen cells instead of their incubation and the disposal of the hatching virgins, if in good condition.

Numerous enquiries are being received by the Secretary of the Club from readers of the **Bee Press** on the introduction of such inventions in their apiaries. For this reason he will be glad to receive members of the Trade for inspecting experimental models and for organising production.

As mentioned elsewhere, the aluminium comb has proved, in spite of its imperfections, a great success. Experiments are being now conducted for the purpose of evolving a more improved metal comb, British standard size to begin with. Anxious correspondents are therefore advised to await developments.

CO-OPERATIVE BEE CULTURE.

It is announced that in aiming at wider service and better organisation the British Food Culture Association have been transformed into the British Food Culture Syndicate. The services of the Association during the war crisis to hundreds of cottagers and smallholders is beyond question, and they ought therefore to receive now an appreciative support in their new venture.

During a re-organisation period it is almost an impossibility to give literary work sufficient attention, but we sincerely hope that the re-appearance of "Co-operative Food Culture," the official organ of the society which has been missed by many readers, will not be over-delayed.

The re-stocking apiary is in the able hands of Chas. Howes, whose great interest in co-operative bee culture is a worthy example.

In their endeavour to create a form of professional and national unity amongst British apiarists, the B.F.C.A. created a coalition society, so to speak, under the name of the " National Beekeepers' Association." As may be expected, this aroused unmerited suspicion and criticism ; and we fear it will take a long time to introduce the most desirable spirit of professional co-operation, which, in reality, is much more paying than professional jealousy, dear only to small minds.

We think the N.B.A. is not to blame for their inability to conduct some serviceable research in the absence of either a Government grant or of a special research fund. The same logical excuse applies to the B.B.K.A., the senior bee organisation in this Country, as well as to other leading societies. There is undoubtedly a revival of a spirit of research, but as for financial support from the bee community for advancing such a noble purpose, it is frankly nil.

* * *

Our Book Shelf.

NOSEMA DISEASE.

By G. F. WHITE, Specialist in Insect Diseases.

[Bulletin No. 780, United States Department of Agriculture, Washington. Procurable from the Superintendent of Documents, Government Printing Office, Washington, D.C., at 10 cents per copy.]

By far this is the most important work of its kind that has appeared since the publication of the reports of our official investigators on Isle of Wight Disease in 1912-13.

Concurrently Dr. White, whose most able researches on brood diseases have considerably advanced our knowledge regarding their detection and treatment, contributes very useful notes on Nosema Disease, summarising the chief points of his work, to the AMERICAN BEE JOURNAL, commencing the current number.

Whilst partly deferring the critical examination of this impressive report till a following issue, we would quote here for the benefit of our readers the "Summary and Conclusions" given by Dr. White, and we cannot but express our admiration for the great encouragement traditionally given by the American Government to those engaged in education and scientific research, even in relation to questions which do not primarily affect the American people.

Dr. White concludes his document as follows : " The following statements concerning Nosema disease seem to be justified from the facts recorded in the present paper :

(1) Nosema disease is an infectious disorder of adult bees caused by **Nosema Apis.**

(2) The disease is not particularly malignant in character, being in this respect more like sacbrood than the foulbroods.

[This statement should not be accepted as a general rule without reserve, seeing that Dr. White has been dealing with this disease, **as it occurs in America,** where the scientific breeding of bees has hitherto received a much greater attention than in Great Britain. It is logical to presume, therefore, irrespective of the question of the difference in the strains of **Nosema apis** prevalent in different countries, and irrespective of variation in atmospheric conditions and other factors, that American bees (principally composed of Italians and " hybrid " Italians in the majority of modern apiaries) will not readily succumb to Nosema infection, and therefore the disease will not assume there a malignant character. Quite the opposite conditions are met with here.—Ed. B.W.]

(3) Adult workers, drones, and queens are susceptible to infection, but the brood is not.

(4) The infecting agent, **Nosema apis,** is a protozoan that attacks the walls of the stomach and occasionally those of the Malpighian tubules.

(5) A colony can be inoculated by feeding it syrup containing the crushed stomachs of infected bees.

(6) One-tenth of the germs present in a single stomach are sufficient to produce marked infection in a colony. [This shows how valueless it is to depend on B— Naphthol and Formalin tablets and the like as preventatives when placed in the hive.—Ed., B.W.]

(7) Within a week following the inoculation the parasite can be found within the walls of the stomach.

(8) Before the close of the second week infection can be determined by the gross appearance of the organ.

(9) The disease can be produced at any season of the year by feeding inoculations.

(10) Infected bees may be found at all seasons of the year, the highest percentage of infection occuring in the spring.

[Infection—not necessarily exhibiting marked symptoms or terminating in a fatal issue—will greatly occur in the active season, for several clear reasons. On the other hand, the incidence of fatal infection has generally been met with in this Country during the resting season, in the course of which the majority of cases of this disease declare themselves, although being insufficient to account for the greater mortality which is prevalent, and which is no doubt due partly to faulty methods of wintering.—Ed., B.W.]

(11) Nosema infection among bees occurs at least in Australia, Switzerland, Germany, Denmark, England, Canada, and the United States. This distribution shows that the occurrence of the disease is not dependent altogether upon climatic conditions.

[Yet we know that it does not establish itself in such Countries as Spain, Portugal, Syria, Egypt, Tunis, etc., where the weather is favourable for regular cleansing flights and for almost continuous compensatory breeding. The Tunisian Bee is known to be susceptible to the disease, yet it is apparently immune in its native land.

Temperate weather cannot be considered therefore other than ideal for maintaining or improving the health of the Honey Bee. It is certainly an important factor in disease prevention.—Ed., B.W.]

(12) The course of the disease is not affected directly by the character or quantity of food obtained and used by the bees. [This is a different case from the predisposition of a poor unnatural diet to the exhaustion and sickness of the bees.—Ed., B.W.]

(13) A sluggish body of water, if near an apiary and used by bees as a water supply, and the robbing of diseased colonies, must be considered for the present as two probable sources of infection.

(14) The transmission of the disease through the medium of flowers is not to be feared.

(15) The hands and clothing of the apiarist, the tools used about an apiary, and winds need not be feared as means by which the disease is spread.

(16) Hives which have housed infected colonies need not be disinfected and combs from such colonies are not a likely means for the transmission of the disease.

[These last two points show the **comparative** non-resistance of such a protozoan as **Nosema Apis,** although being a sporing organism. At the same time we very much doubt that White would have come to these last two conclusions had he been conducting his investigations in this Country, the homeland of I.W. disease, with a majority of susceptible strains at his disposal. We do not go so far as to support such extreme views as those of Gilbert Barratt which appeared in the June issue of the BEEKEEPERS' GAZETTE, although we agree with him in some of his views. Nevertheless, we cannot but strongly dissent from the above-mentioned conclusions when applied as a general rule in a Country where the disease is truly a malignant epidemic, and where many colonies of bees badly need regeneration. With bees resistant to infection the case is different, and one can afford therefore to ignore accidental infection.—Ed., B.W.]

(17) Bees dead of the disease about the apiary are not likely to cause infection unless they serve to contaminate the water supply.

(18) **Nosema apis** suspended in water is destroyed by heating for 10 minutes at about 136° F. (58° C.)

(19) Suspended in honey, **Nosema apis** is destroyed by heating at about 138° F. (59° C.)

(20) **Nosema apis,** drying at room and outdoor temperatures, respectively, remained virulent for about 2 months, at incubator temperature about 3 weeks, and in a refrigerator about 7½ months.

[This finding in itself shows the necessity of a greater precaution in safeguarding against the transmission of infection than advised by the author. It is true that Nosema Infection is primarily a gastro-intestinal disease, which is principally transmitted through the food or drink; at the same time we should not forget that the bees in their habitual fondness of cleanliness mainly use their tongues for this purpose.—Ed., B.W.]

(21) **Nosema apis** was destroyed in the presence of fermentative processes in a 26 per cent honey solution in 3 days at incubator temperature and in 9 days at outdoor temperature. In a 10 per cent sugar solution it was destroyed in from 7 to 11 days at room temperature.

(22) **Nosema apis** resisted putrefactive processes for 5 days at incubator temperature, for 2 weeks at room temperature, and for more than 3 weeks at outdoor temperature.

(23) **Nosema apis** when dry was destroyed in from 15 to 32 hours by direct exposure to the sun's rays.

(24) **Nosema apis** suspended in water was destroyed by exposure to the sun's rays in from 37 to 51 hours. [Hence it is advisable not only to control the water supply to the bees, but also to render it regularly exposed to the rays of the sun. A glass water fountain is superior therefore to a zinc one or to a metal or wooden pail or tub.—Ed., B.W.]

(25) **Nosema apis** if suspended in honey and exposed to the sun's rays frequently will be destroyed on account of the temperature of the honey which results from the exposure.

(26) **Nosema apis** remained virulent in honey for from 2 to 4 months at room temperature.

(27) **Nosema apis** in the bodies of dead bees ceased to be virulent in one week at incubator temperature, in 4 weeks at room temperature, in 6 weeks at outdoor temperature, and in 4 months in a refrigerator.

(28) **Nosema apis** in the bodies of dead bees lying on the soil ceased to be virulent in from 44 to 71 days.

[It is of the greatest value from the point of view of combating this infection to have ascertained these facts, even though they may be variable to some extent under different conditions.—Ed., B.W.]

(29) **Nosema apis** is readily destroyed by carbolic acid, a 1 per cent. aqueous solution destroying it in less than 10 minutes.

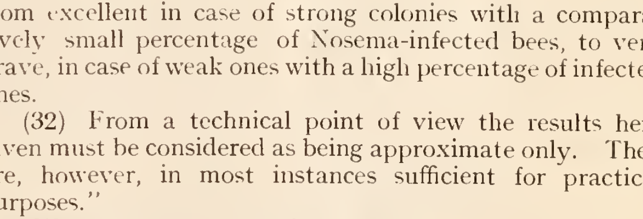
[Although Dr. White in his report reservedly says: "While it is thus established that **Nosema apis** is somewhat susceptible to the effects of some of the drugs, the experiments are altogether too few for definite conclusions as to the extent of their action," he has nevertheless encouraged those who support the "antiseptic method" of treatment. In our opinion, the selection of a truly non-toxic antiseptic—and we have already made some suggestions regarding this point in various Bee Periodicals—combined with its early internal administration in comparatively large doses, will count for much in aborting this infection.—Ed., B.W.]

(30) The time element which by the experiments is shown to be sufficient for the destruction of **Nosema apis** should be increased somewhat to ensure their destruction in practical apiculture.

(31) The prognosis in Nosema disease varies markedly from excellent in case of strong colonies with a comparatively small percentage of Nosema-infected bees, to very grave, in case of weak ones with a high percentage of infected ones.

(32) From a technical point of view the results here given must be considered as being approximate only. They are, however, in most instances sufficient for practical purposes."

We cannot too strongly recommend to every student of beekeeping to secure this creditable work and to study it carefully in relation to other modern literature on its subject.



THE BEE FEVER IN AMERICA.

L. L. Andrews reports in the **Western Honey Bee** that "car after car of nuclei continue to go from the orange belt to the great alfalfa—sweet clover ranges of Utah and Idaho. Some enquiry for large shipments of bees by the pound came from Nevada. Nevada has a law forbidding the bringing of any bees into the State on combs."

The "bee fever," however, is never without its drawbacks, since the same writer complains that "there seems to be a lot of complaint of—well, some beekeepers call it plain stealing—brood and bees being taken from the hives and the covers replaced, so that no discovery of the loss is made until the hive is opened. I find that if a swarm goes into a decoy hive and 'someone' gets there before I find it convenient to bring it in, it is almost sure to disappear. If a fellow stole a pig worth ten dollars, would he go unpunished? What about a colony of bees?" To this question the Editor of our contemporary replies as follows: "And when a deputy inspector is reputed to be one of the guilty parties, what are we going to do about it?"......

NATIONAL BEEKEEPERS' SCHOOL IN U.S.A.

The **W.H.B.** reports: "A bill is to be presented in the present Congress which had its origin in the Legislative Committee of the National Beekeepers' Association, for the establishment of a **National Beekeepers' School**, and providing 100,000 dollars for the proposed school; said school and fund to be managed by the U.S. Dept. of Agriculture."

Relating to Educational Propaganda in America the same periodical reports: "**Bee Schools**, which continue for one week, in California and other honey-producing States, and consist of lectures on various phases of beekeeping, are designed especially for the commercial beekeeper rather than the man who keeps a very few bees as a side line, the policy being to make better beekeepers, rather than to increase the number of beginners. This, the specialists believe, is the best way to increase the nation's supply of honey."

In Great Britain, the policy is to recruit suitable beginners as well as to spread greater knowledge through County Associations and bee publications. The **K.B.K.A.** have set a fine example in this respect, due no doubt to a splendid co-operative spirit and to the educational and organising ability of Jarman and Judge, also to the enthusiasm of their colleagues. But several other educational bodies are still more or less apathetic. The senior beekeeping federation in this Country (the **B.B.K.A.**) have proved repeatedly their ability to tackle the beekeeping problems that present themselves from time to time, whenever their members showed sufficient interest and support. And it rests therefore with the affiliated societies to keep a lively interest in the present development of British bee culture, and to regularly supply the senior federation with constructive advice and criticism, in place of the traditional destructive criticism which is still the order of the day. The same applies to leading federations in Scotland and Ireland. And further more, we cannot emphasise too much the value of regular Conferences between these representative bodies for constantly watching the interests of beekeeping and beekeepers, both educational and otherwise. Unfortunately not one such Conference has been accomplished in this Country up to the present.

BEES AND FRUIT GROWERS.

Fruit growers in Santa Clara are paying from 1.50 to 3.00 dollars per colony of bees accommodated in their orchards for the purpose of pollanisation. In this Country many fruit growers who do not recognise their friends from their enemies are still prejudiced to even the free accommodation of bees.......

CO-OPERATIVE DECENTRALISATION IN GLOUCESTERSHIRE.

The Gloucestershire Beekeepers' Association are "anxious to establish local centres in connection with the parent Association in order that beekeeping may be put on a truly scientific and remunerative basis."

THE FIRST RECORDED BRITISH PATENT SPECIFICATION.

In presenting the library of **The Apis Club** with a copy of the first recorded British patent specification, W. Hy. Simms, the well known writer on beekeeping inventions and member of the Council of the B.B.K.A. writes to us: "The specification lacks any detailed description, but its quaint wording is amusing, and from its brief statement of the invention it can be seen that over 240 years ago beekeepers knew that ventilation helped to prevent swarming and that the bees stored honey in upper chambers which could be removed without destroying the bees."

A DOUBLE SERVICE.

D. M. Macdonald, the distinguished contributor to the Bee Press, has now retired super-annuated from his position as a school teacher after over 47 years' service. As an educationalist amongst beekeepers he has done a considerable service for a life time and is still far from relinquishing his enthusiastic efforts. We hope to publish in the near future an article from his pen on "The History of the British Beekeepers' Association." At present he is enjoying a tour of two months' wandering. Correspondence addressed to the "Schoolhouse, Anchindoun, Dufftown, N.B." will reach him.

We would welcome similar contributions from other writers on the History of the Scottish and Irish Beekeepers' Associations.

THE PASSING OF EUGENE SECOR.

The **American Bee Journal** announces the death of Eugene Secor, who was widely known as a horticulturist and a beekeeper. "He began contributing to the pages of the **Am. B.J.** nearly forty years ago. He was not a specialist and did not rise to great eminence in any field, yet he was a leader in several. For many years he was prominent in the beekeeping field, having served as Vice-President, and later as President of the North American Beekeepers' Association; the name was later changed to National." His life career is a record of great activity and devotion to the progress of beekeeping.

ANOTHER SACRIFICE.

The death of Mr. Hillier, of Hurstbourn Torrent, Andover, who was killed in action in France, is also reported. The **B.B.J.** comments: "Before the war Mr. Hillier's name was well known as an exhibitor at various shows—especially the Grocers' and the Dairy Shows. The latter Show he always made a point of attending. To use Mr. Pearman's words he was a 'splendid man and beekeeper,' like all good beekeepers, always willing to help those commencing to keep bees, and though the 'Isle of Wight' disease has been bad in the district where he lived, it is interesting and encouraging to hear that one of his pupils in the craft has now over a dozen hives. The loss of such men is a misfortune, but the example they set should be an inspiration to those following them."

ONLY 1,440,000 POUNDS!

Gleanings reports: "The Imperial Valley Honey Producers' Association has purchased a warehouse at El Centro and will ship the honey of members of the organisation. Imperial County now has about 18,000 colonies of bees. At this season little honey is being taken from the colonies, but they will average 80 pounds each during the year, making the annual production about 1,440,000 pounds.

THE CALIFORNIA HONEY BOWL.

This is the name of a new bee periodical edited by E. J. Atchley and published quarterly at Riverside, California.

HONEY EXHIBITIONS IN KENT.

It had been decided to hold a Honey Show in each Division in Kent this year as follows:—

Eastern Division	Canterbury	Thursday, August 21st
Midland Division	Maidstone	Saturday, August 30th
Northern Division	Gillingham	Friday and Saturday, September 12th and 13th
Western Division	Bromley	Saturday, September 6th

"At each Show there will be classes for sections, all grades of extracted honey, shallow frames, beeswax, home-made appliances and special ladies' classes for cookery and confectionery exhibits. There will be gift classes of one section or one jar as usual, these being sold for the benefit of the Prize Fund."

THE WYE SHOW.

The Prize Schedule for the Kent Honey Show at Wye, to be held on August 13th as announced in our last issue, testifies to the claim that it is the Premier Honey Show in England. Encouragement is given to all possible classes of exhibitors and comparatively liberal prizes are offered. It speaks highly for the good taste and experience of the organisers.

The Arena: Letters to The Editor.

SOME FACTS ABOUT QUEENS.

To the Editor of The Bee World.

DEAR SIR,—The deplorable state of beekeeping at the present time emphasises the paramount importance of the queens heading our stocks, and we must ever have in mind the inevitable fact, that what the queen is, so the hive will be, and whilst a section of beekeepers advise the rearing of queens from a handful of bees in a nucleus, the fact remains that a queen **cannot** breed strong, healthy, disease-resisting bees unless she is raised by a large force of bees, **and these in a fit condition** for this important duty. One has only to look around, and see that the only apiaries that escape I.O.W. trouble, are those that are allowed to rear their own queens under natural conditions. I recently purchased four stocks of black bees that had been for many years in a labourer's garden; the hives had not been even opened for eight years, but all were strong and healthy, and packed with bees. These were the only living bees in a radius of six miles. These queens were reared under natural conditions, and if we can approximate these conditions, under whatever system of queen rearing we use, then the prevention of disease is assured. Although rearing no queens for sale, I procure the best blood obtainable from all parts of U.S.A., testing each one, and rearing queens and drones from the best. A high class strain is thus assured, and has resulted in the elimination of I.O.W. trouble. The drone element is of far greater importance than is realised by the majority of beekeepers, and is proved by the immense difference in the progeny of the same batch of queens mated to different strains (not races) of drones. As for drone breeding virgins, most of the text books tell us that unless a virgin mates within about thirty days of her birth, she is incapable of mating, and will only deposit drone eggs. The fact is, that if a virgin **is not allowed a flight,** she can be kept two or three months, and if weather conditions are favourable, will then mate and produce regular worker brood; this, in spite of all authorities to the contrary, may be easily proved by placing excluder zinc before the entrance, but care must be taken that the queen does not have the opportunity of exercising her wings when opening the hive. I received a Punic virgin last season on the 15th of August, that was hatched on the 12th of June, in four days she mated, and then produced regular worker brood.

Another cause of degenerate bees is that large numbers of virgins reared for sale are confined in nursery cages for several days before being given to nuclei. Whilst caged they can only feed on that beekeeper's abomination, candy. The first days of a queen's life are the most important, and unless she has free access to a supply of honey **and pollen,** for the building up of her marvellous constitution, her progeny will inevitably suffer in stamina.

Given good queens, we should surely make the best of them, but this is quite impossible with the absurd frames that are the standard size for this country. It may be a coincidence; but we are the only country using a small frame, and are the worst sufferers from I.O.W.

When the size of the British frame was decided upon, native bees were practically the only ones in the country, and as these are not so prolific as the foreign races, the evil was not so pronounced, although, at the time, many of the most prominent bee men in the country pronounced against it, but to put a high grade, well bred queen upon such frames is ludicrous. A second body box of frames, to some extent, alleviates the trouble, but a queen never does so well when the methodical laying of her eggs is permanently divided, and it is earnestly hoped that the National Beekeepers' Association will make this one of their first reforms. It may be pointed out that to use, say, the 16×10 frame, the only alternative size that may be purchased from the appliance houses, only requires a slightly larger body box, as the top bars are only half an inch longer than the standard, the depth, of course, being greater, but one advantage is, that existing W.B.C. hives may be used with it, and if the standard frames or combs are used for supering, no loss is entailed.

If our queens are of the right sort, and bred correctly, we may all have the pleasure (and profit) of seeing these large frames, solid slabs of brood, which alone will produce that vast force of bees necessary to secure a large surplus of honey.

Yours faithfully,
GILBERT BARRATT.

546, Ecclesall Road,
Sheffield.

[Our correspondent's interesting communication raises some important questions for discussion. First, he rightly lays stress on the importance of **the selective breeding of drones** after defining the principal conditions for **progressive queen-rearing.** Why should the father of the colony be treated with indifference, especially by those who aim at improving their bee strains, is beyond our imagination. Some progressive apiarists are contented with encouraging drone breeding from selected colonies and trusting after that the mating of their virgin queens to good luck. Although the mating of bees is far from being under our absolute control, an advancement in this respect consists in **the transference and distribution of selected drones.** Combs of rapidly-hatching drone brood raised by selected strong colonies should be given to nuclei with queen cells, or with young virgins. The original discarded drones should be destroyed and the nucleus hive over-flooded for the time with the selected drones. In spite of this precaution a certain proportion of failures will take place, but we doubt that with greater experience the proportion of failures will ever reach 20%. Whilst an excessive number of drones are being accommodated by a nucleus, the latter should be regularly and liberally fed, and as soon as possible the drone-celled comb should be replaced by a worker-celled one.

The success of selective mating through the transference of drones suggests the possibility of **in-breeding** to no small extent as one of the failures of **uncontrolled natural breeding**. On the other hand, Nature wisely provides to some extent against this failure by the free access permitted to the drones to practically any hive under favourable conditions. Yet we know that the most interested party in the nuptial flight of a virgin queen are her own or her adopted sisters and brothers. Therefore, if we would remove the true brothers of the queen or rather all drones in her hive, and if we associate with her selected foreign drones, and with due examination for further exclusion, the chances of unsatisfactory breeding will become very small. There is much labour involved in this procedure and therefore cannot be endured commercially except for the sake of a high standard of production, but at the risk of a limited output and at a high cost.

The interesting disclosure that **a virgin queen may be kept in confinement for two or three months** without ultimately becoming a drone breeder needs further verification. Has the able Secretary to the Sheffield Beekeepers' Society conducted several experiments which prove this statement or is it merely a case of one or two interesting exceptions which prove the accepted rule? Is there any possibility of queen mating within the hive under exceptional conditions? Has he sufficient evidence that the virgin queen to which he refers has truly remained so from June 12th, till August 15th, and what is the evidence?

Modern apiarists do not imprison their virgins for a long time but dispose of them as early as possible, even when too young to travel and at the risk of loss and compensation, so as to ensure: (1) proper attention including suitable natural food; (2) early mating. It is some gain to exclude, if possible, the urgency of the latter.

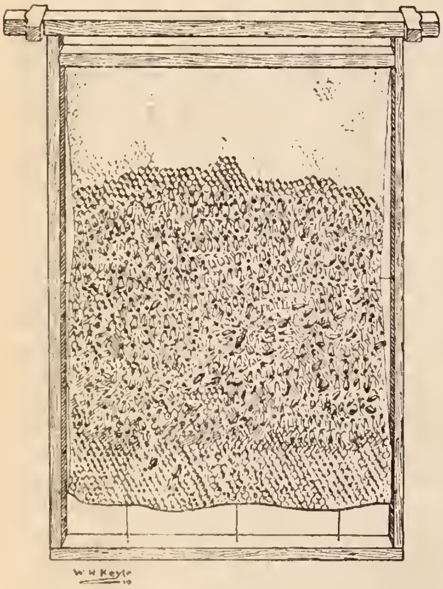
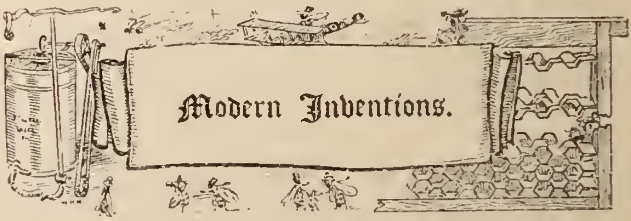


Fig. 7.

As to **the revision of the standard comb** we need not further supplement our previous notes in THE BEE WORLD. Anyone of our interested readers can readily satisfy himself by simple experiments that (1) prolific strains of bees really need much larger breeding room than permitted by the present ten-combed hive; (2) that in addition to a large breeding area and a large food storing area, the latter should be conveniently related to the ascending cluster during bad winter weather; hence the comb suggested in the accompanying illustration at once presents itself. It is not only a matter of size, but also of shape which merits our consideration. Free bee space above the comb proper for the moving cluster in winter must be seriously considered so long as we use the same type of comb for breeding and wintering. Instead of introducing a new type of comb to suit present hives (except as a transitional measure) it is decidedly preferable to entirely uproot the evil. This is a big question which can only be solved by the combined decision of all leading associations in Great Britain, and not by the decision of a single association, however progressive and influential they may be.—Ed., B.W.]



Modern Inventions.

THE ALUMINIUM COMB.

We expected to publish in this issue a detailed report of successes and failures in the trial of the aluminium comb. We were partly mistaken in our anticipation, since our experiments have proved a complete success with one exception, for which the bees may be forgiven, and they have indeed our whole-hearted sympathy.

When transferring the combs from the temporary hives to the proper ones, the operation was satisfactorily conducted, except with one lot that have built some brace comb, which became alone filled with eggs and brood. This had unavoidably to be destroyed; and although insignificant in amount, it was followed afterwards by the entire colony decamping, no brood or eggs being found deposited in any of the cells of the artificial combs.

After the lapse of twenty-nine days from the date of hiving of the strongest swarm, this particular colony sent out a swarm. On calculating the rate of activity of the queen at earlier manipulations, it appeared that she must have been fully laying in the central two combs (both sides) on the first day the bees took possession of the combs. The full set of ten Langstroth combs were loaded with brood (in various stages of development) and food three weeks from the date of hiving.

In one case the bees lost their queen on her mating trip, and although entirely lacking brood, they did not desert their home. No fertile workers appeared amongst them after nearly three weeks from the date of hiving before they were re-queened.

Since then all the three colonies established on these metal combs have been prosperous and strong.

The aluminium comb in its present shape no doubt needs additional improvement, nevertheless it has proved in our hands, so far as the breeding season is concerned, a signal success. The bees were careful enough to fill the holes at the bases of the cells (which holes result in the process of folding the metal foil) and to line the edges with wax. Therefore, although clustering on these combs, they would be in reality clustering on wax; and we have no doubt they will winter successfully, at least in so far as suitable combs are responsible for successful wintering.

The Secretary of **The Apis Club** is engaged at present in evolving a more improved metal comb, and it is hoped that if sufficient facilities could be obtained from the manufacturers these may be made in British standard size to begin with and adopted during the coming season.

These aluminium combs may be still inspected by visitors to the **Research Apiary** of **The Apis Club** during July and August on favourable days.

We hope to publish in our next issue a photographic illustration of the aluminium comb with the bees established on it.

It meant a great worry to us extending over a year and including some trouble with the H.M. Customs Office before securing the few combs in our possession, and as we intend to winter the bees on these combs we regret that we are even short of an adequate number for our purpose and cannot therefore oblige County experts who have applied for some of these combs for trial. They are not so far available in this Country and have not been manufactured yet in British standard size. We trust that we may succeed in introducing a metal comb that will merit wide adoption by British apiarists.

We consider that it is highly in the interests of foundation manufacturers not to be indifferent to the possibilities of the artificial comb in the immediate future and should take a leading part in helping its development so that the profession may benefit by the perfection of both inventions.

THE INCUBATING OR BROOD HATCHING CHAMBER.

Sufficient literary notes have appeared comparatively recently in several publications (e.g., THE BRITISH BEE JOURNAL, THE BEEKEEPERS' RECORD, CO-OPERATIVE FOOD CULTURE, etc.,) on this appliance that we need not give here a special description of its construction or main function which is signified by its name. We note, however, some recent criticism from an apiarist who has never given it a trial and we equally note a great appreciation from those who have used it, especially those engaged in restocking work. We propose therefore to give it a critical exposition in a following issue.

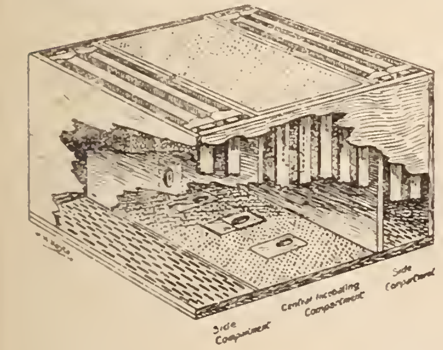
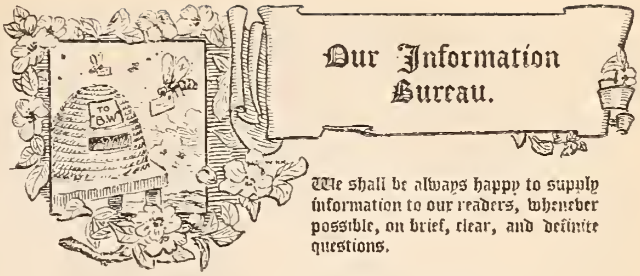


Fig. 8.
The Incubating or Brood-Hatching Chamber.



Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

THE FALL OF THE QUEEN.

Q. Is it a comparatively common case to get a good fertile queen transformed for some reason or the other into a drone layer? What are the most likely causes?

A. No. This is likely to happen only with an old queen which has exhausted her store of spermatazoa; but in actual practice, in the hands of a modern apiarist, and in a good community of bees, this stage is rarely reached, for soon signs of exhaustion would precede this stage. An improperly mated queen may share the same fate. The chilling of a queen is supposed to act likewise, but in our experience this is to be much doubted. Such harmful chilling as would injure the contents of the spermatheca will probably suffice also to injure other vital organs, and to end the life of the queen.

FERTILE WORKERS.

Q. How can I safeguard my bees against the evils of fertile workers? I am only a novice who is anxious to avoid bad mistakes. Are the native bees prone to this habit?

A. Fertile workers are more of a curiosity than a nuisance with all European bees, including the predominant British bee. No such a creature is met with in a prosperous colony, in a weak nucleus or in the majority of instances when bees are robbed of queen and brood. Under the latter circumstances they will work apathetically for their living, and they may or may not finally have a laying worker brought to the front. On the other hand they may gradually desert their home and join neighbouring bees, especially if they were subject to the attack of robbers.

Egyptian bees are noted for tolerating fertile workers, but as they are fond of excessive swarming, at least in their own country, it is possible that this merely indicates a division of labour in relation to breeding. On this subject in relation to swarming and re-queening Dr. Lewis H. Gough, the well-known authority on Egyptian beekeeping, wrote to us as follows last February: "I do not know what is the stimulus for swarming; it certainly is not merely overcrowding. I have had swarms leave hives in which only half of the frames were covered. On the other hand, I have succeeded in keeping bees throughout the season in sufficient strength to cover all the frames without swarming.

Fertile workers only occur when there is no queen in the hive; but the Egyptian bee is very liable to produce such fertile workers when requeening for any reason. For

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*** The Editor of THE BEE WORLD will be glad to receive from manufacturers of Bee-Hives and Appliances reports on new inventions or improvements which they introduce for the progress of bee-keeping. Their efforts—whatever these may be—will always be treated with the fullest impartiality and appreciation, at the same time with the fullest candour in criticism.

instance, when introducing queens of other breeds, it most frequently happens that the bees take no notice of the introduced queen as long as she is in her cage, but start producing queens. If there are no eggs or larvae present, they almost immediately produce laying workers. I have not been able to distinguish laying workers by any test, but know that they do not behave like queens in other respects. For instance, they still fly out of the hive with the other workers, as can be proved by changing the position of the hives. In an experiment with two hives—A containing no queen and laying workers, B containing a queen but weak—when the position of the two hives was exchanged without further disturbance, a laying worker or workers entered B and killed the queen."

We may add to these remarks that the same experiment may be applied to other varieties of bees under similar circumstances with invariably similar results, showing that foreign old workers (and not necessarily fertile ones) may attack the queen without being protected by her own society. We have had this test confirmed in four experiments conducted simultaneously.

WINTER PROTECTION.

Q. I am not quite clear about the application of heat in connection with the " Incubator Hive " illustrated in the June number of THE BEE WORLD. Are you not afraid about the bees getting suffocated or restless ?

A. Heat generation in the " Incubator Hive" is effected in a special chamber **below** the brood chamber. This is called the "incubating" or "heat generating" chamber. In winter a temperature of, say, 45° F. is maintained in the latter chamber, preferably by means of electricity, the object being to secure a favourable protecting temperature to the air supply. It means less food consumption to the bees to raise the air supplied at 45° F. to the clustering temperature of, say, 65° F. Less food consumption in the absence of opportunities for cleansing flights means less restlessness. It would be entirely non-scientific and against all practical knowledge of beekeeping to supply bees in winter with air heated to their temperature of clustering. It should be **much below** this, in order to allow for the additional generation of animal heat. Suffocation or restlessness are then out of question.

Q. What do you consider the most suitable quilts for bees in winter ? Are wooden quilts of any service ?

A. . This question has already been answered in our editorial for June. The accompanying illustration (Fig. 9) suggests a wooden quilt which will be found serviceable. It permits of a free bee-space above the combs, of good insulation, and of facilities for feeding. Candy feeding in winter is not so simple as it looks. It needs a good deal of attention unless one is perfectly certain that the bees are regularly consuming the candy. Candy which has been wrongly prepared will attract moisture if left unconsumed for long and will drip over the clustering bees. Even well prepared candy will share the same disadvantages to a certain extent under similar conditions. Therefore if candy feeding is to be employed in winter as a routine—a practice which cannot be too strongly condemned and only permitted as a forced necessity — this should influence the selection of quilts. It is possibly advantageous to adopt the American method of placing the candy in a small plate resting on the top bars of the combs. In this case soft porous quilts should be used, strips of wood being employed to create a bee space between them and the candy.

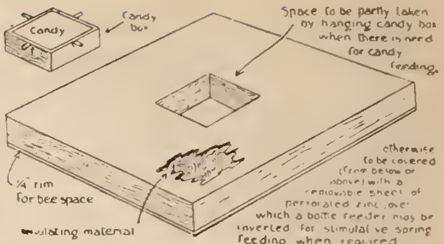
Candy
Candy box
Space to be partly taken by hanging candy box when there is need for candy feeding.
otherwise to be covered (from below or above) with a removable sheet of perforated zinc, over which a bottle feeder may be inverted for stimulative spring feeding when required
¼" rim for bee space
insulating material

Fig. 9.

OBSERVATION IN OUTDOOR HIVES.

Q. Is it possible for bees to live in outdoor semi-observatory hives ?

A. Yes, provided the wooden shutters are made sufficiently protective. A strong colony may succeed, however, in outdoor wintering in spite of great negligence, although at the risk of a heavy sacrifice.

Semi-observation may be secured by employing glass or mica quilts, but these must be excluded in winter on account of the harmful condensation of moisture.

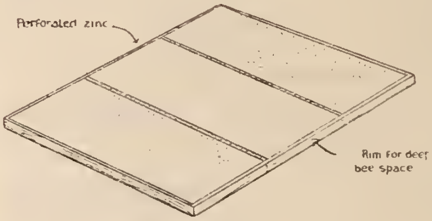

Fig. 10.

On the other hand, sufficient useful observation for general purposes could be gained both in the working season and in winter by adopting a perforated zinc quilt as that illustrated in Fig. 10. This is also serviceable for feeding at any time.

"DRY" BROOD.

Q. Every week or so the bees of one of my colonies bring out of the hive in some numbers white dead larvae which appear to be in a dry condition. The bees seem prosperous and progressing and the brood looks healthy. Can you offer an explanation ?

A. In the absence of disease, as suggested by our correspondent, we have known instances of highly prolific queens excessively ovipositing in the early warm days of the spring under the stimuli of heat and food, though in the absence of an adequate number of covering bees (which are generally considered essential for the expansion of the brood nest). At less advantageous conditions, some of this brood was bound to become chilled, and to die. If left unremoved from the hive for some time in hot weather, it will dry, until later removed methodically or otherwise by the scavenger bees.

Brood killed through excessive heat may present the same features.

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their party or school, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

Vol. I. No. 3. AUGUST, 1919. Monthly ; 2/6 a Year.

Editorial.

A GOLDEN AUGUST. The golden flood of sunshine that has bathed the Country during this month, and has indirectly saved many colonies for the time being from inevitable starvation, has not materially transformed the prospects. Young queens of small colonies that have miserably stopped laying in the absence of adequate food (natural or artificial) are busy laying again, and the present stores in ordinary districts, of no special richness in flora, cannot last for long in supporting so many hungry mouths. Our estimate that the unfortunate beekeeper should be permitted about twenty pounds of cane sugar (not ten !) per needing colony is far from being an exaggeration. The present official policy does not only seem to us to be entirely illogical and disastrous, but also insulting to the Profession. It is based on distrust, pure and simple, and on autocratic ruling. Some beekeepers may never need feeding their bees, others will find the average allowance quite sufficient or in some cases more than sufficient, but the apiarist is never officially permitted to say how many of his colonies do need feeding, and to make his own estimate accordingly. The small beekeeper is probably the biggest sufferer from this policy, especially when modified later by an additional allowance in the shape of **candy,** instead of one single liberal allowance which may include supplies for early spring use, that may well be stored and sealed in the combs well in advance.

In the absence of a combined representative effort on the part of our leading Associations, we do not expect much good from sporadic protests ; therefore, considering the scarcity of bees—and especially of good bees, our readers may be advised not to waste their time and money in leaving their stocks without adequate winter stores. They may as well choose a lesser evil by feeding them rapidly on cheap foreign honey (previously medicated with a suitable antiseptic) at the risk of the incidence of dysentery, rather than witness later the deplorable tragedy of starvation. We wonder when will the troubles of the British beekeeper end !

FORMING NUCLEI. E. F. Ledger puts on record in the B.B.J. his disappointment with the results of stuffing the entrances of hives with grass, leaving to the bees to gnaw their way through it. Our disappointment is even greater than his. We have found closing the entrances with perforated zinc on the other hand partly effective, and less causative of much mortality, but as a whole it is far from being a satisfactory inducement to the adult bees to accept their new home. One nucleus at a time enforced by an artificial swarm from the same colony is the only safe way of increase by this kind of procedure to the smallholder. Short of using an out-apiary of over two miles distance from a stock breeding apiary for the purpose of accommodating nuclei, we know of no better method than raising a nucleus on the **incubating principle** above a strong colony and later transferring it to its destined site for independent development.

Towards the close of the season the development of a nucleus on three combs to densely cover nine within six weeks or less has been achieved with a selected prolific queen and with intelligent management in the shape of stimulative feeding, adequate packing, and the judicious expansion of the brood nest. For this reason it is a far better investment at this time of the year in the hands of experienced men.

Weak queenless bees may be united with advantage to a nucleus headed by a respectable queen worthy of survival, and in that shape the investment, even at the latest part of the season, is a decided gain, when we realise that the prospects of adequate bee supplies of good quality for the coming season are still far from being assured. It is criminal, however, to encourage beginners to commence beekeeping in the fall, unless under the full supervision of a bee master, and even then it is doubtful that this would be a better instructive course than a spring beginning.

THE UNWELCOME "RULER." Only in the hands of experienced men the task of **direct queen introduction** is a very simple one, with exceptions that may not appreciably count. For novices, not only direct but also the **indirect introduction** of a queen is a serious problem. The difficulty is not much less with men who may claim "keeping bees for years." but whose personal intimacy with their habits and whose experience in various manipulations is limited.

Judging by the number of queries we receive on queen introduction the troubles of our readers are endless.

A new mother to a colony is generally an unwelcome "ruler." Precautions have to be taken in many instances to induce them to accept her. The following carefully worded standard circular which is supplied by several leading apiarists with their queens may be taken as an illustration :

> " Before giving the queen to the colony **be sure** it is without a queen either fertile or virgin.
>
> Colonies should be queenless not less than 24 hours, nor more than 5 days ; if longer, 1 or 2 frames with quantity of unsealed larvae should be given before introducing.
>
> To introduce virgins, the colony should be queenless not less than 3 days. See that all queen cells that may have been started are destroyed.
>
> To introduce with this cage remove the wooden lid, also the piece of paper covering the food ; see there is a plentiful supply of candy in the food hole, note the condition of queen, now place the perforated zinc so that all three holes are covered, put the cage on top of the frames zinc downwards, taking care that the holes come between the top bars, allow the cage to remain thus for twelve hours, then slide wooden portion forward to the turned-up end of zinc so that the food comes over the large hole in zinc, the bees in hive will eat away the food and so liberate the queen in from 1 to 2 days.
>
> Do not disturb the colony for at least 2 days after the queen has been liberated.
>
> If the weather is cold, set the cage right over where the cluster of bees are. Should the queen and her attendants arrive feeble, or smeared with food, release her at once among the bees ; if after they clean her they ball her, return her to the cage and introduce as explained.
>
> If your bees are or have been robbing, you may not succeed in introducing.
>
> N.B.—Queens just arrived by Post usually look small and dark ; after laying a few days they will improve."

It is customary also to advise making the bees fully realise their queenlessness before introducing a new queen.

We have frequently practised queen introduction **simultaneously** with the removal of the old queen, that is, without giving the bees a chance to realise the change as it occurs. But as for **after-effects,** here lies the problem.

We attribute our successes and failures to observing or otherwise the following rules : (1) It is not safe introducing a virgin in place of a fertile without a ceremony, as directly her incapacity is discovered by the bees, she is bound to be "dethroned," in spite of her acquiring the odour of the hive by her previous immersion in honey derived therefrom. Previous preparation of the colony as advised in the above-quoted circular will overcome this difficulty ; (2) a prolific fertile queen of a superior quality than the superseded one will be invariably accepted, an inferior one will be invariably rejected, unless the bees are persuaded to accept her indirectly ; (3) for successful direct introduction, it is not only necessary to overcome the nervousness of the queen, by temporary disabling her, but it is equally essential to transmit to her the odour of the hive. Her immersion in honey derived from the hive not only effects this, but also diverts the attention of the bees from attacking her to attending to her. Scented fluid or flour (as used in uniting) is also very serviceable; in the latter case, depriving the queen of food for half an hour or so beforehand (as advised by Simmins) is helpful. (4) Weak nuclei are in a better mood to accept a new queen than strong colonies, especially during the honey flow or during liberal artificial feeding.

To put it briefly, the safest advice that can be given to a novice regarding queen introduction is **not to be too anxious to gain both time and queen,** and further to intimately acquaint himself with the condition of his bees. Provided the bees have been queenless for a few days and have been robbed of all their first endeavours to build queen cells, the new queen may be temporarily accommodated alone for about 3 days (at least until the bees show by their manner of activity that they have more or less overcome the shock of their loss) in a tubular perforated zinc introducing cage (or the like) hanging between two combs. She will be fed by the bees and will acquire, in time, the odour of the hive. After the lapse of such a period a second look at the combs for destroying further possible efforts at building queen cells should be made, before finally releasing the queen quietly on a following evening. We have yet to know of a failure for this method. It does not save valuable time, but as a rule it saves a valuable queen, which means much to the average beekeeper.

THE FATAL 'CURES.' In sending a kindly message to THE BEE WORLD, an F.R.M.S., who is a leading member of the Profession and a known investigator, comments : " I shall watch its career with interest, but think it is little use espousing 'cures' which are followed by the death of the stocks treated."

We confess our great surprise at reading this comment, since, to put it mildly, it is a most unfair accusation. Our contributions to the Bee Press surely do more than testify to our anxious efforts to break up the semi-commercial spirit of 'cure' partisanship which has degraded a certain section of the Craft. Without any sense of self praise, we do not mind asserting that no other writer has taken a stronger attitude on this point more than ourselves. At the same time we did not hesitate to give almost every germicide and preparation formerly adopted our impartial consideration, to stimulate further research, and to suggest taking advantage of the best uses of most of them.

Of a certain antiseptic of a germicidal potency which is nearly equivalent to that of pure carbolic acid in a 5% solution, and yet is positively non-poisonous in our experience, we have nearly used two gallons during this season in a large breeding apiary of about two hundred colonies, accommodated on the same ground. Although we have entirely failed in detecting any signs of disease, we are not attributing our good fortune merely to its liberal employment as a prophylactic, but need only remark that we have not been disappointed by the loss of any of our stocks through its use. Our position is quite the reverse. Honestly we cannot make a good guess at our correspondent's reference, but if he will be good enough to favour us with a detailed criticism, we shall willingly publish it. We prefer to keep the generous compliments of our friends to ourselves, but we believe that we owe to our readers the publication of such a criticism.

OVER-WORKED BEES AND I.W.D.

One of several associated theories which are in the air at present relative to the causation of I.W.D. is **the " over-work " theory.** Some apply it to the queen, others to the workers, whilst a third group of apiarists find it more logical to embrace both. A prolific queen, according to the advocates of the new theory, should not be encouraged to " excessively " oviposit, no clear definition of limitation being given, but apparently one would be lowering the stamina of the queen and her progeny, if merely followed her natural desire and permitted her more room for laying as an alternative for forced swarming, which, in fact, means heavier toiling for the bees and queen in establishing their new home.

Another curious suggestion is that through faulty manipulations, young bees may be forced to forage earlier than normal and to unnaturally over-work themselves and become disposed to disease. We have entirely failed to satisfy ourselves that normal foraging is not dependent on the ability of the bees to forage ; or that nursing bees forced to leave the hive earlier than usual are anything but crawlers or short fliers at best.

A still more surprising hypothesis is that I.W.D. is caused by excessive breeding, and that it could be produced artificially by continuously depriving the bees of their brood, and inducing them regularly to rear additional batches of it ! It is only too obvious that by adopting this practice, the original colony will soon become composed of dwindling old bees ; and it will not create any surprise if they presented symptoms of exhaustion not unlike those met with in I.W.D., which symptoms are by no means of a specific character.

BEES DANCING ON THE COMB.

The " dancing " of bees on combs, generally met with amongst weak nuclei, is a sign of nervousness or the outcome of suppressed excitement, when no subjugator of any form is being used in fine weather. It is occasionally met with amongst bees on combs taken out from strong colonies. It takes the shape of a quick shaky movement, generally from side to side, with or without simultaneous walking on the comb. That such " dancing " has anything to do with brood-rearing, as has been recently suggested in a contemporary, cannot be expected or admitted. We took special care to investigate this point when examining many colonies in ordinary hives, apart from the repeated watching of a nucleus in an observatory hive, and we could only gather the above impression.

LITERARY PRIZE COMPETITION.

We have pleasure in announcing that the prizes for our first literary competitions have been awarded to the Rev. W. Henry Richardson and Fredk. P. Smith, Esq. These will duly appear in THE BEE WORLD.

In communicating to us his decision, the Referee remarks that all the essays submitted are of a good standard. His decision is, of course, purely literary, and must not be taken to mean that he is in full agreement with the views expressed.

Those who know the lovable personality and exceptional courtesy of J.H.H.—a public bee man of position, who has nevertheless gained the affection and respect of almost all the sections of the Bee Community, both adherents and opponents : a great tribute in itself—and those who realise his exceptional over-occupation even in his travelling time, will understand our gratitude for his endless favours and for his practical support.

Original Contributions.

International Bee Culture.

By C. P. DADANT.

Editor, The American Bee Journal.

I am highly pleased to read that we are to have an International Monthly Journal.

Already, years ago, we had an international bee magazine which did a great deal of good. Mr. Edouard Bertrand, of Nyon, Switzerland, established a " Revue D'Apiculture Pour la Suisse Romande," in 1879, and solicited my father's collaboration. As it was one of the first to sustain the modern systems, my father gladly accepted to write for it. After 5 years of the publication of a modest but valuable magazine, Mr. Bertrand was asked to change its name to " Revue Internationale D'Apiculture," for it was indeed international in scope. But his modesty at first caused him to demur. In 1885, he added this as a sub-title. It was not until 1887 that he decided to change the title entirely to that of " Revue Internationale," which was continued until the end of 1903, when the publication was suspended. This suspension was not on account of failure, but because its editor the same Edouard Bertrand, disliked the idea of handing, in his old age, his beloved publication to other hands. Those who knew him and enjoyed the magazine considered it a great mistake, for the world needs such a magazine. But we entertained great respect for the aged editor who had so well managed the little " Revue " and we understood his feelings. He has been dead now two years. A local " Bulletin de la Société Romande " has taken the place of the old " Revue." It is a very well-managed little periodical.

The World is therefore ready to welcome an international magazine, managed by young heads, open to progress, and eager to listen to all, taking good things from any source, even from such as we have been calling enemies for the past 5 years, for there are no enemies in beekeeping and the sooner we forget the troubles and strife, the sooner we will realize that there are honest people everywhere and that progress comes from every direction.

We, Americans, are prone to consider ourselves as above average in the conduct of beekeeping. This is due to the fact that we are all pioneers in a new country, that we brought with us a medley of the ideas and the languages of all the world and that we have no prejudices in the matter of the source of a progress, provided it is proved a progress. We changed from the bee-gum of the woods to the most practical hive of Langstroth and Quinby without hesitancy. But there are others as progressive as we, even in the Countries where the " skep " has held its own for centuries.

We remember also that most of the scientific facts have been brought to us from Europe, that our men of science are just beginning to make their presence felt. That is why we need international information.

So, welcome to THE BEE WORLD. We will expect it to give us all new things from any direction. It should be a true and active transcriber of the beekeeping ideas of all the world. C. P. DADANT.

[C. P. Dadant, the learned Editor of the AMERICAN BEE JOURNAL, is not only a leading figure in the Bee World, but is also one of the foremost scholars of international bee culture. His virile magazine which is highly esteemed in the five continents, is a live depiction of the best that may be gathered from any field, and is in itself, an international production of the highest quality. We may never succeed in thoroughly accomplishing our task, since, as we have already remarked in BEE CRAFT, our aim " cannot be readily attained ; and it will be some time before even securing regular foreign corespondence," But we hope, at least, to succeed in emphasising the spirit of international co-operation for the good of beekeeping as a science and a profession.—Ed., B.W.]

Scottish Beekeeping.

By T. DUNCAN NEWBIGGING.

Beekeeping is so very different in Scotland from beekeeping in England, and especially from beekeeping in the South of England—so different that I have known many failures due entirely to the fact that the beekeeper read a book written for (or at least only applicable to) beekeeping in England and did not realise the importance of " locality."

One point of special application at this time of year is, " The moving of the bees " to the heather.

My own opinion is that beekeeping will not really pay anywhere unless the bees are " moved " from one field to another. Certainly in Scotland one is almost forced to " move " the bees, if one would avail one's-self of the various crops, e.g., fruit bloom in April and May ; clover in July and August ; heather in August and early September. With this necessity in view, and with the knowledge that for many centuries it has been customary to move the bees to and from the heather, the first thought that strikes one is—How is this to be done to the best advantage ? Every Scottish beekeeper of any experience will have in his memory the remembrance of the midnight trek to the Moors undertaken in the face of the most exciting conditions : darkness, or mirky dawn, a horse drawn vehicle, heavy cumbersome, clumsy hives—hives which, for all the world look like so many dog-kennels—hives tied with string, etc., insecure, ill-ventilated, having no free space for the bees to cluster in, the whole resulting in much danger to horse, to bees, to brood and to man. This after great labour and much anxiety.

Of course it was great fun and we all enjoyed the outing ; but it was not (and is not) progressive beekeeping.

I know that nearly all the books caution us against " inventing " new hives ; but these conditions are so awful in waste of time and labour, so difficult and dangerous, that I have run counter to this advice and have invented a new hive.

Why should the Ancients say—or even suggest—that, with them, the ultimate has been arrived at, in the matter of hives.....?

What then are the essentials in a hive adapted to successful beekeeping ?

(1) Shape : cubical, permitting of close packing and interlocking.
(2) Lightness : easily picked up and carried about.
(3) It should possess a " grip " for lifting it by.
(4) It should be strong and roomy ; and yet it should be as cheap as is consistent with its other advantages, certainly cheap enough to permit of destruction after a few years use without involving great capital loss.
(5) It should have a flat roof (which is always a ready table in the apiary).
(6) It should have no legs nor any such excresences as outer plinths.
(7) It should have a separate " stance."
(8) It should allow of ease, speed, and convenience in being made ready for transport ; and in this it should permit of :
(9) Efficient ventilation, so placed that neither accident nor gross carelessness can block it up.

It should give a quick and easy safe means of liberating the bees once they are placed on their new stances, and the hive should be firm and secure simply by being placed on its " stance."

All this should be obtainable without the need to carry hammers, etc.

It should possess a very large bottom feeder, easily accessible, so that the bees may be quickly fed up after being depleted of their stores. This is specially important at so late a date as the finish of the heather crop in September.

A hive endowed with all these points—and many others—has been evolved in the working of my apiary. With your permission I will submit on another occasion details to your readers. As an illustration of its convenient packing and adaptability I may mention that thirty of these hives, securely packed and fully ventilated—(two ventilators, each 15″ by 3″)—ready for transit to the heather, did not occupy a greater surface area than that of a small garden table measuring 10ft. by 4ft.

They were all packed without the use of a single tool of any kind.

I have protected this hive meantime ; and have called it the " T.D.N." or " Expeditious " hive.

Not the least advantage of this hive is the record holder which while always immediately accessible is yet in a clean dry place.

[We welcome Dr. Newbigging's instructive contribution and endorse his remark as to the importance of recognising the factor of " locality " in offering practical advice. Our Scottish as well as our Irish friends may depend that we shall be always glad to publish topical notes on matters of special interest to them, from information supplied. In fact, should this periodical be destined to pass its infancy stage and to successfully develop, we shall have no hesitation in creating special sections concerning different Bee Communities in almost all Bee Lands. For the present, suffice for us to have introduced a healthy international spirit of a wider exchange of thought, and to have presented at a heavy financial sacrifice a simple model, which is beyond the financial resources of **The Apis Club** to further magnify. Although there is no difficulty in securing a 10,000 circulation for this periodical during the first year of its issue, judging by the gratifying moral support which it has already received, it must be clearly pointed out to our constructive critics and advisers, who appear to think that we have missed or ignored certain important duties, that the fault is far from being our own, for the simple reason that it is impossible to build with labour alone. We have reached a limit in circulation in which the loss on a greater issue of THE BEE WORLD cannot be endured, as every copy of the periodical is almost supplied gratis for the sake of furthering our educational aims. We could multiply the subscription fee by five and yet retain the support of the overwhelming majority of our readers. But to do this would mean the frustration of our educational labour. Rather than favour this attitude, we would prefer ceasing its production.

We heartily thank our distinguished and sincere collaborators—including our artistic printers, Messrs. Pearce & Co.—for their boundless encouragement and support, and are happy to note the pride and interest which is shewn by no few of our readers in championing the principles of **The Apis Club,** but would respectfully draw their attention to the fact that although we are morally enriched by an added membership of the **Club,** the financial force of THE BEE WORLD can only be derived from educational grants or from advertisements or from both, and it is left to members of the **Club,** each of whom is bearing a share in the production of this Organ, to examine both sources of enforcement, and to render their utmost share of help.

It is to be hoped that this information, which we do not care to repeat in future, will suffice as an apology and an explanation. No doubt it will also be of some interest to the Bee Historian of the future......—Ed., B.W.]

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By CHAS. HOWES.

The season just closing has been about as bad from a honey standpoint, as any I have known during the 40 odd years I have been actively associated with the Craft, as, since May was out, the weather has been everything it should not be, for our poor little friends. While the fields and hives were " stinking " with bloom, feeding had to go on in every hive, if life itself was to be preserved. Woe to the indolent or careless beekeeper who neglected this ! My bees are 3 miles from my home, and as I have to leave early on five days in each week for London, it has been almost impossible to give the attention necessary. One Saturday during June I left all my bees, as I thought, well stocked with food for at least a week until I could attend to their requirements again, but, alas, on opening the hives the following week, I found 3 beautiful Italian stocks had succumbed to hunger. Needless to say, I quickly put all the remainder right without much loss of time. Now, at the end of the first week in August, we are having the weather which would have deligthed both us and our bees, had it come in June and July. **Drat** our climate !

On the 7th inst., amid the blazing sun, I saw three fine young Italian queens return from their honeymoon trip. And to-day they are each laying and showing signs of " making good " in the next few weeks if only " old Sol " will be kind. Good luck to them ! They will lack nothing in the shape of stores, the feeder being on all the time, in preparation for the dark cold days before us.

Speaking of queens, mine must be getting fairly Italianised in this Country, as in addition to the several hundred which I have imported and sent all over the British Isles, from John O'Groats to Lands End, and from Yarmouth to West Ireland, others presumably have been doing the same, though possibly on a somewhat smaller scale. Should the daughters of these queens mate with either English or Dutch drones I anticipate a great improvement in the virility and stamina of our home stock. The only fear we need have is, living on artificial food for the winter, and the slovenlyness of some beekeepers, thus creating an " atmosphere " and conditions in which disease will thrive and devastate.

The other day I had an invite to Colchester to remove a swarm which had taken up its quarters between the walls of an ancient Country Hall. I took uniform with me, and very fortunate I was in thus deciding, as I had to turn mason on arrival ; and, with the aid of hammer and chisel, remove about 3 to 4 ft. square of wall before locating the whereabouts of the little beggars.

This was all done, however, but I soon found, upon cutting out the newly made combs (they had been there 10 days), that Her Majesty eluded me by getting through a small crevice into an aperture between two beams which it was impossible to cut. There was nothing left for me but to admit defeat, and return to Cambridge with my empty swarm box, a very sad but wiser (?) man. I soon " had my own back " however, as a few days later, post a card arrived inviting my return. On reaching there it was soon apparent that one of the three swarms I found safely " housed " in the orchard, was that which was driven into too close quarters between the beams.

They had come out next day, and I now have them " busy as bees " in my apiary at Cambridge. I do not regret my two visits to Colchester however, as indeed never do, to this fine old Hall whose inhabitants dwell in a Paradise of defined unconventionality, making every visitor feel "at home" provided he puts on no "side," or require too much attention paid him. The most enjoyable feature of the whole thing is that everyone, from the Mistress downwards, are trained to do their quota of work, and all appear to enjoy it, even the small boy who entertains you at mealtimes by standing on his head, or performing other gymnastic exercises on the lawn.

Dutch Bees.—I have heard complaints of these bees because of their propensities to swarm, but my opinion and experience leads me to the conclusion that it is largely the beekeeper's own fault, as if commonsense methods were employed in dealing with them, there would be little cause for grumbling.

The queens are somewhat like the Carniolans in prolificness and if people will persist in confining them to the orthodox 10-frame brood chamber, they must expect all they get. Each of these breeds require, at least, a 12-frame hive, or better still, two chambers of 10 frames each. I am convinced it is all a question of ample room in advance of their requirements, and if this were supplied, we should hear little about excessive swarming, an abundant honey harvest being the result.

Notes on the Egyptian Bee in England.

By F. M. CLARIDGE, Copford.

After several unsuccessful attempts last year and this, I was fortunate to receive a queen alive of a fasciata direct from Egypt, through the courtesy of Dr. Lewis Gough, to whose kindness and perseverance in sending so many queens the thanks of all interested beekeepers are due.

In offering the following remarks on the behaviour of this race in England, I wish to make it clearly understood that I do so with due regard to the very short experience I have had with them, and no statements must be accepted as binding and definite, for without doubt, Apis fasciata being a true honey and hive bee, is included among the bees "which do nothing invariably."

I received my live queen on May 25th, and although it was Sunday, I considered the occasion too important to put off introduction, especially as the weather was rather unsettled. I introduced her by a special cage, particulars of which I will give, with the Editor's kind permission, in a later number of this Journal. Suffice to say for the present that no bees other than her travelling companions were allowed to approach her, and the comb upon which she was placed being all mature and hatching brood, she quickly had a colony of young bees around her, Italians of course.

Five days later, this comb with the queen and adhering young bees was transferred from the introducing hive to the one I intended them to occupy, and another good comb of hatching brood, but no adhering bees, and a comb of stores given them. The queen had just started to lay.

On June 3rd, four days after transference, I grafted several batches of queen cell cups for rearing some young queens. As these young larvae were being nursed and reared by Italians, I hoped to get larger queens than their royal parent, who was very small, not much larger than an ordinary Italian worker, but having the true royal form, with a long abdomen.

In this my hopes were realised, for the ensuing queens were as large as most and larger than some Italian virgins I have seen. Unfortunately I lost several in the nursery cages, due to the bad weather prohibiting examination in time, and several more in introduction to nuclei. With regard to the latter, I found the virgins rather nervous, and inclined somewhat to attack the bees first, or if any workers brushed against her, to lift her hind legs right over the abdomen, as if afraid of attack.

The colour of the young virgins was rather lighter than their mother, but all had the distinctive coppery coloured bands. All the virgins I found were rather chary of flying, but the cool weather may account partly for that. One was 19 days and another 27 days before laying, but several days on end were wet and cool during this period. I have recently had an Italian queen go 30 days—mostly wet it is true—before laying.

As the young bees began to hatch out in the original stock, I soon found out that their temper was very dubious, at times being very quiet, and at others, veritable demons. I had to put on gloves more than once, a thing I have not done for some time.

The appearance of the workers is certainly very pretty, with two and a half yellow bands on the abdomen and their grey hair, but the description given them in some of the text books as the "most handsome bees," is not quite correct to my way of thinking. I have some American five-banded bees, which I consider much more handsome. The Egyptians are rather smaller than our bees, and build their combs closer together naturally, so to prevent undue bracing. I resorted to "close-spacing," which I found an efficient preventitive.

The colony progressed on its own resources, as I purposely refrained from feeding artificially in order to test their honey gathering capabilities, but up to the present, there is not more than 4lbs. of stores in their hive.

On July 7th, I found scores of queen cells started, and expected preparation for swarming, so to prevent loss of the queen, I clipped her. At this time I was so extremely busy with my routine work, that I decided to send the original to Dr. Abushâdy, knowing how interested he is in the trial of this race under English conditions, and I also distributed a number of virgins to various applicants, through the medium of the BRITISH BEE JOURNAL, most of whom, I regret to record, have not thought it worth while to say "thank you."

After the removal of the old queen, the number of queen cells appeared to increase tremendously, so that after distributing a number of virgins, which I took from the hive where they were running around in scores, and after the issue of a swarm which contained 40 virgins, I killed 168 in the parent hive, leaving one only (so far as I could tell). All the cells built were only on two combs, and the bees only covered four and part of the fifth, so how many queens they could raise if they ever filled out ten good combs, I should not like to guess. It was an extraordinary sight to see scores of young queens, all running over the combs, yes, and out of the hive, around the legs and the ground also, and not fighting at all. It appeared that the only fighting going on was on the part of the workers themselves, for as soon as a young queen popped out of her cell, they would seize her by a leg or a wing and hold her, squealing and tugging, as if preventing her from attempting to do damage to the other cells or queens, though this may be only surmise on my part, for I found by experiment that when put together in a cage, the young queens would not fight among themselves : indeed I sent Dr. Abushâdy a parcel of 8 **all in one cage** and he acknowledged their safe arrival !

The day after the swarm issued, I found in another hive which was rearing Italian queens, having several nice cells sealed, that an Egyptian virgin had taken possession and my Italian cells non-existant. I hope no others have met a similar fate.

At work, the Egyptians do not appear very good, as was expected, but some half Italian blood (fasciata queen crossed Italian drone) are working very sharp, but it is too early to report results. Their temper also appears rather sharp and uncertain, but I fancy not quite so bad as their cousins. In this respect, I found that a good spray is better than anything to subdue them, smoke being worse than useless, indeed it only aggravated them.

The note of the flying (in the pure race) is very high and shrill, and one would soon get to learn the difference between an Egyptian and any other race. They appear to be full of " vim " and their movements are decidedly " vivacious," and if this is a permanent trait, it will be something to work on in producing a fresh strain with a view to resistance to diseases.

With regard to wintering (it is decidedly **not** too early to talk about wintering, Mr. Carter), as it is stated that these bees do not form a winter cluster, I intend trying two methods :—one will be to " boost " a stock up as late as possible in the fall with hatching brood from good Italian stocks, and the other, to winter over a strong stock of Italians with a wire cloth screen in between the two colonies, the Egyptians having a separate entrance, specially made to exclude as much light as possible.

I shall be pleased, as occasions permit, to give short reports of anything of interest respecting these bees, if our Editor desires, but as he now has several young daughters and the original queen in his possession, he will doubtless be in a better position than I am for making experiments and recording results—in which work he has my sincerest good wishes.

[We shall welcome additional notes from our studious contributor, and will endeavour in a subsequent number to comment on his observations, partly in the light of our own experience.—Ed., B.W.]

ODDS & ENDS CONCERNING BEES

BEEKEEPING IN ANCIENT GREECE.

It may be known to some, though perhaps not a matter of general knowledge to beekeepers, the matters I refer to under the caption heading this department.

In the course of a score or more years reading of bee literature I have come across many interesting facts and fancies regarding bees and their products. In these occasional notes I will draw upon these stores of memory, eked out from an ever growing scrap-book.

Amongst my literary treasures is a book of travels, "A Journey into Greece by George Wheler, Esq." published in the year 1682. As showing the advanced state of bee culture obtaining at that period I will reproduce some extracts :—* "..........This mountain is celebrated for the best honey in all Greece, of which it makes a great quantity to send to Constantinople where it is much esteemed for making **Sorbets.** They use therefore to bring all the honey made hereabouts, to be marked with the Mark of this Monastery of **Cosbashi,** to make it sell the better. We eat of it very freely, finding it to be very good ; and were not at all incommoded with any gripings after it. This Mountain was not less famous in times past for bees and admirable Honey, the Ancients believing that Bees were first bred here, and that all other Bees were but Colonies from this Mountain ; which if so, we assured ourselves, that it must be from this part of the Mountain that the Colonies were sent ; both because the Honey here made is the best, and that here they never destroy the Bees. It is of a good consistence, of a fair gold-colour, and the same quantity sweetens more water than the like quantity of any other doth ; which they sufficiently experience in making Sorbet. **Strabo,** I remember saith, The best Honey of Hymettus was by the Silver Mines ; But where they were, is now unknown ; unless hereabouts, by the same reason. Now the best argument to prove that Bees had their original from hence, is, That here they never destroy or impair the Stock of Bees in taking away their Honey. A thing which I no sooner knew, but I was inquisitive to understand their Method of Ordering the Bees : which being an Art so worthy the knowledge of the curious, I shall not think it beside the purpose, to relate what I saw, and was informed to that effect, by such as had Skill in this Place.

The hives they keep their bees in, are made of willows, or osiers, fashioned like our common dust-baskets, wide at

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(*) Capitals and Punctuations as in the original.

the top, and narrow at the bottom; and plastered with clay, or loam, within and without. They are set the wide end upwards..........The tops being covered with broad flat sticks, are also plastered with clay on the top; and to secure them from the weather, they cover them with a tuft of straw as we do. Along each of those sticks, the Bees fasten their Combs; so that a Comb may be taken out whole, without the least bruising, and with the greatest ease imaginable. To increase them in Spring-time, that is, in March or April, until the beginning of May, they divide them; first seperating the Sticks, on which the Combs and Bees are fastened, from one another with a knife: so taking out the first Combs and Bees together, on each side, they put them into another Basket, in the same order as they were taken out, until they have equally divided them. After this, when they are both again accommodated with sticks and plaster, they set the new Basket in the place of the old one, and the old one in some new place. And all this they do in the middle of the day, at such time as the greatest part of the Bees are abroad; who, at their coming home, without much difficulty, by this means divide themselves equally. This device hinders them from swarming, and flying away. In August they take out their honey, which they do in the day-time also, while they are abroad; the Bees being thereby, they say, disturbed least. At which time they take out the Combs laden with honey, as before; that is, beginning at each outside, and so taking away, until they have left only such a quantity of Combs in the middle, as they judge will be sufficient to maintain the bees in winter; sweeping those bees, that are on the Combs they take out, into the Basket again, and again covering it with new sticks and plaster."

Mr. Wheler—after Sir George—does not say how it was that the bees in these Grecian hives fixed their combs along these bars? It was left to a famous Scotch Doctor, John Hunter, to explain nearly one hundred years later, how bees would build comb down from any salient edge. Apparantly the Grecian beekeepers knew this fact centuries before we did.

Many times I have formed a ridge along the bottom of brood bars by wetting the side of a smooth board and holding it along the centre of the bar and with a brush dipped in molten wax brushed along the edge of the board. When the board is withdrawn there is a ridge of wax that the bees at once start comb building from. This ridge is just as if a starter of foundation had been used.

THE TRAVELLING OF A SWARM.

The following cutting from an old number of **Gleanings** written by Mr. Holterman is interesting as showing how far a swarm can travel:—

I recently met two fishermen who related to me an incident of great apicultural interest. These men stated, and there is abundant to corroborate it, that, while sailing on Lake Erie a large swarm of bees was seen coming from the North. The swarm passed the search-light some three miles from Erie City, and landed at that place, where it was hived and is now located. I was asked where the bees came from, and I unhesitatingly stated, as had others, that they must have started from the Canadian shore of Lake Erie, travelling right across the lake. Granting that the bees came from the extreme end of Long Point, they would have to travel 46 miles over water. Bees would never leave the United States shore to travel out a distance and then return, as they would have to do in case they came from the United States; and a bee-line or anything like it from Erie to the search-light, and then continued, would lead to the Canadian shore.

I recently related the above to Jas. Armstrong, Cheapside, and he told me the following incident:

Some thirty-three years ago a man by the name of Harrison, township of Walpole, county of Haldemand, Ontario, cut a tree on Peacock Point, which runs out into Lake Erie, and the tree contained a colony of fine Italian bees. At that time there were no Italian bees in the district that either Mr. Harrison or Mr. Armstrong knew of, and both gentlemen believed that this swarm had crossed the Lake from the United States—a distance of over 50 miles. It is rather singular that two such facts should come under a beekeeper's notice within a few weeks; and being so reliable, they are well worth recording in apicultural history, and they pretty well prove that a swarm can travel a long distance.

THE EXCELLENCE OF ENGLISH HONEY.

S. Baring-Gould says in one of his books in praise of English honey: From the blossoms of the furze the bees derive their aromatic honey which makes that of Dartmoor supreme. Yet beekeeping is a difficulty there, owing to the gales that sweep the busy insects away, so that they fail to find their direction home. Only in sheltered hives can they be kept. The much relished Swiss honey is a manufactured product of glycerine and pear juice; but Dartmoor honey is the sublimated essence of ambrosial sweetness in taste and savor, drawn from no other source than the chalices of the golden furze, and compounded with no adventitious matter.

By W. S. TURNER.

It is said that in the cycle of seasons we have a good one for every three or four indifferent ones, and if this be so, then surely this is the good season, for after a cold long drawn out spring, with much rain and a 1-inch fall of snow on April 27th, we began to see the sun. By the 10th May, we were enjoying fine warm sunny days. All the better were these days appreciated by contrast with their forerunners.

Up North, many of us thought how backward our stocks would be, and what a poor season we should have, but no, for the sun attained such power, that nature seemed to wake up suddenly. What usually takes a month to accomplish, she squeezed into a fortnight or less, and what had been dormant hitherto, was now bounding into life. This latter applied also to bees and as if realizing that great exertion must be made if they were to be ready for the first honey flow, they stimulated their queens to the utmost and we, who had been so pessimistic, were gratified to find how splendidly things were levelling themselves up. I wonder if ever there was a greater profusion of bloom on Sycamore, Horse Chestnut and Hawthorne, than this year. Never have I seen trees bedecked in such splendour—perhaps I haven't always been so anxious to see the blossom as I was this year—but surely even nature was giving her thankoffering for restored peace and clinching the matter by giving plenty.

One of our black stocks pulled 30 shallow frames out from 10th to 30th May, and the queen was allowed to deposit eggs therein, occupying ten standard and thirty shallow frames, not a bad performance for the much criticized black.

An Italian stock, the queen of which we got last year from the Whirlow Apiary, built an extra brood chamber from foundation given on 23rd May, also 10 shallow frames and is now occupying the lot plus a rack of sections and except for the rack of course, most of the combs are full of sealed brood. This also is a good performance.

We extracted a super the other day of sycamore honey and not at all as described by the books, which tell us that sycamore honey has little flavour.

One hears a lot about the stamina of bees and in this respect the black seem inferior, for I find the blacks can't stand up to the Italian. For some time now it has been noticed that whenever the blacks are drinking at the fountain in the garden, the Italians will fight them off and the blacks go down every time. Another peculiarity is that according to our experience, an Italian will enter a black hive and stay there if so disposed, and the blacks tolerate it. Not so the Italians, if a black as much as shews its nose at their entrance, it is pounced upon.

The fearless defence of home, so strongly marked in some Italian strains, was very much marked the other day when I opened a stock with the intention of clipping the queen's wings. However, my wings were clipped instead and that very severely, so that I never got as far as the queen, who still walks about as sedately as ever without her beauty being marred.

I read much correspondence last winter on the effects of stings on different constitutions, in which such extraordinary effects as swollen throat, rash appearing on body, and a sensation of pins and needles in the stomach were evident. Much to my surprise I went through all these uncomfortable symptoms. It would be very helpful if some of our medical beekeepers could suggest a diet which would charge the blood with some property to enable it to resist the poison, for if the body is influenced by one's diet surely some foods would help in this way. One of the stings was on a vein, so that, I suppose, would be the reason of my feeling it so much.

Talking of stings reminds me of an old Farmer, who, a little while ago, was helping a friend to take a swarm, and after being assured that they would not sting, came along cheerfully until he got one on the nose, and to use Ebenezer's own words he said, " By gum, Mester, doan't they, but nivver agen fer me." He would have made a fine rival for Ally Sloper for a day or so afterwards.

Once when visiting an old beekeeper of seventy odd years in the Yorkshire East Riding, he told me over a pipe alongside the hives, that a new Minister came to their Parish and started beekeeping. When visiting the old Yorkshireman, the Minister was informed that his bees were robbing the hives of his host. " Robbing, my bees robbing? Never; they wouldn't do such a thing." " But wouldn't they?" said the old man, " I'll show you then." He thereupon called "young" Amos, who himself was forty years old, and told him to take a flour dredger to t'passon's and dredge t' bees as they came out of their hives. Surely enough in a few minutes came many floured bees intent on securing cheap honey. Of course the Minister was very much surprised and pained to find that he harboured thieves at the Vicarage.

However, under the old man's advice this was soon stopped and things went on again smoothly.

A rather interesting incident has happened at our Apiary this year whilst getting queens mated, which I have never observed before. Two nuclei which had Italian virgins were noticed to force the young queens out of the hive. Having got them on the alighting board, they immediately formed a circle round them, heads towards the queen and literally hustled the virgin into flight. I watched this, two or three times, on several successive days about 2-30 p.m., Greenwich time each day. I have never noticed this before and wished I could have photographed them, as the circle of bees was as perfect as the one, in the illustration in Tickner-Edward's book, of Bees and Queens on Combs. All these things make our hobby very fascinating, proving the saying that bees do nothing invariably, and as a writer in a contemporary says, "We are always learning."

The greater one's power of observation is, the more wonderful nature proves to be.

Marketing Honey.

By W. J. OWERS, Ealing.

In marketing honey, to be successful, one should adopt sound principles and **adhere** to them. There is nothing that causes more disappointment than getting a sample lot of honey, whether in sections or otherwise, to find that instead of a sample being " sent " it should have been labelled " show specimen." Therefore the first principle should be **grading,** and none but the very best should be **grade 1.** Sections should be fully finished and weighing each at least 1 lb., carefully cleaned of all propolis, which is an easy matter with the aid of a wooden scraper or a sharp knife used edgeways and fine sandpaper. And, if possible, the source of supply should be noted. It is just these few points, which to some people are minor, that should be uppermost in one's mind, if one wishes not only to get customers but to retain them as well.

Of the many attractive forms of selling sections there are none nicer than the **Glazed section holders**; but taking into consideration the price of glass at the present time, I should advise using **cardboard cartons.** Of course it should be made attractive and distinctive with, let us say, " Pure Comb Honey " label on the front, with the name of Apiarist and Apiary from which it came on the top of the carton. A statement to the effect that the contents are pure on the two sides is an explanation. Description of the honey and its flavour, or of honey as a food, not forgetting a reminder " not to store in a cold place, but keep in the warmest and driest available," is very serviceable. By this method one entirely cuts out sections spoiled by flies and dust. Another very good point is to stamp the section in such a manner so as to obviate the chances of it being changed, or, better still, a piece of paper pasted round the section before being inserted in the carton, or across the top of carton, with some such words as: " **If this label is broken we give no guarantee.**" As an article of food, it is just as important to cover honey as jelly, sweets, or syrup; and one is sure then that the honey is wholesome.

It is quite possible to get a cheaper carton of brown paper nicely printed in like manner, or carefully folded in grease proof paper secured by an elastic band; but any other method will only tend to cheapen the section. I should strongly advise using the former because the retailer can pack the honey without danger, and, moreover, they tend to whet the customers appetite by a recital of the merits of honey as a food.

Grade 2 sections should be disposed of locally among friends at a little cheaper price, always giving the reasons for the reduced cost ; the rest should be fed back or extracted, the drawn-out combs serving as decoys the following season.

The Royal Show.

By A Leading Member of the Profession.

When first reading the report in the **B.B.J.** : " We are pleased to report a successful show at Cardiff "one naturally concludes this to be the Bee Section, but if the readers of your Journal could have visited the Bee Department there, I am afraid disappointment would have been written on their faces. We used to see in pre-war days right along the front of the Department Bee Hives in their respective classes, and Honey Extractors as well.

This year (Peace) not one exhibit was to be seen. Were the makers too busy or what was the matter ? Class one was well represented as usual in the background. Similarly Numbers two and three, where were the entries ; No. 4 also. No. 5 : no entries.

Where are the makers now with their standard models which have been talked about during the last five years ? Surely, with the ever increasing demand for bee hives, now would have been the right time to have set about this point in the most determined manner; and at the Premier Show we should have had the classes filled right up.

Messrs. Burtt, Meadows, and Lee, were in full evidence with collection of appliances, but the lack of apathy to bring forward at this juncture, what the B.B.K.A. have been asking for, namely "Standard Models," is very marked. We all realise the difficulties which appliance makers have had to contend with, both on labour and materials, but surely if they can exhibit appliances, they could have taxed their resources at this busy time, and produced at this juncture something worthy of the Peace Year.

[Brief correspondence on the subject of Bee Shows from different experiended writers, embodying constructive criticism and aiming at furthering future developments, would be helpful.—Ed., B.W.]

The Press Mirror.

NATURE AND PRODUCTION.

The real beekeeper is nearly always a naturalist, however humble his education may be. He admires Nature and sings her praise whenever fascinated by her rich flora and whenever grateful for her priceless gifts to his bees and to his table. He will readily endorse the following remarks in one of the letters by J. Dundas White, M.A., LL.D., recently contributed to THE TIMES and compiled in the July number of LAND & LIBERTY : " In saying that "The Land of England, and, for the matter of that, all productive land, is a manufactured article, as much as the clothes we wear, Sir Graham Bower is hardly fair to Nature. What would be the agricultural value of land if it were not for Nature's provision of sunshine, wind and rain ? Nature has not only provided the land, but has also had no small share in the manufacturing of it, as, for instance, by the erosion of the rocks, the weathering of the soil, and the work of the earthworms. Some land would be more fertile to-day if it were virgin soil ; and letting the land lie fallow is the oldest as well as one of the most effective means of restoriing its fertility. Nature has laboured, and man has entered into her labours ; but the fact that human industry has done much in many ways ought not to obscure the more important work that Nature has done and is doing continually."

IN-BREEDING.

In the current issue of our esteemed contemporary BEE CRAFT, C. P. Jarman, intelligently remarks : " That in-breeding is thoroughly bad there can be no question whatever, but we think there may be a question as to the extent of in-breeding in bees, and therefore the extent of its influence in I.W.D. Nature left alone through thousands of years has pretty well guarded against in-breeding, and we doubt if the mating of any domesticated animal is more natural than is the case with queen bees. Have any conclusive experiments been made in in-breeding ? The difficulty most queen rearers experience is not in-breeding, but in keeping their strains free from foreign blood. The isolated apiaries which have to depend upon home-reared drones exclusively are rare in this Country, and we are much afraid that weakness of constitution and susceptibility to infection lie more in the difficulty in selecting the drone than in in-breeding. In nature, only the vigorous strains can survive a severe winter, whereas with the artificial care we are able to bestow on our bees, many stocks of doubtful stamina are successfully wintered, and infuse their blood in the district."

We believe in augmenting the natural methods of protection ; at the same time we do not believe in **championing the unfit**, and we consider that during the active season the watchful beekeeper should not fail in most instances in detecting defective queens, whatever the nature of the defection in their progeny may be.

As for **" in-breeding,"** we have sufficiently commented on this subject in our last number, But we may add a few remarks with advantage.

Let us first analyse Nature's way of safeguarding the mating of queen bees from the evils of in-breeding. This appears to be done in a remarkable way by permitting foreign drones almost free access to any hive during the mating season. At the same time, Nature safeguards against the possible defection of this factor and the consequent failure of virgin queens to mate, and so prefers to introduce an element of in-breeding rather than to witness the extinction of a race. Otherwise, why should an abundance of drones be reared **naturally** by a colony whenever preparations for swarming are taking place ? Further, why should the drones of a colony with a virgin leaving the hive to mate be most concerned with the fete. In our tireless interest we have watched these ceremonies again and again—the rushing of the drones out of the hives is in itself an interesting spectacle. But let us not believe that all these drones are true brothers of our young princess. Some are undoubtedly adopted brothers, and one of these may succeed in mating with her, especially as another natural safeguard is the possible endeavour of a queen to avoid mating with a brother drone, the factor of odour, to which bees are very sensitive, helping in the differentiation. But here again we are faced with a possibility contrary to the presumed law of Nature, namely, that even an adopted brother may be refused. Under the circumstances it seems that the factor of the predominance of the drones and the undefined factor of chance play leading parts.

We believe that the attention of beekeepers to the evils of " in-breeding " did not originally emanate from men of pure scientific notions, but was transmitted from generation to another in vague terms through the wisdom of observant beekeepers—of the skeppist class to begin with. One cannot fail to gather this impression from studying old literature. It is not by any means uncommon at the present time, in the hands of many amateurs, who do not take the trouble to re-queen, and yet who possess young fertile queens of their own, often bred under the swarming impulse, but have little chance of mating with foreign drones, to finally find such queens failing in one way or the other and their progenies a source of trouble and a picture of dissatisfaction.

Selecting drones for mating goes hand in hand with the prevention of in-breeding. We believe in the wisdom and power of Nature, which is bound to hit back if attacked. Yet we think also that what appears superficially as law, is often modified in our thoughts by deeper study; and we further believe that the human mind—a marvellous production of Nature—is fit to thoroughly examine her doctrines and to develop successfully along these. We are none other than working tools to the mighty power of Nature, and to leave her capital without our co-operative labour often results in a crude production. Applying this maxim to bee culture we can easily see in the same County the great difference in results between scientific breeding of apparently similar strains and the opposite. Correct breeding, in the shape of eliminating the unfit, of flooding the apiary district with drones from good colonies other than those with virgin queens, and similar procedures has been testified to by modern writers in Bee Periodicals as highly paying. This is specially emphasised in the United States, where the science of breeding has markedly developed, not on fanciful lines, but on lines of experience and of study.

DETECTING AND DESTROYING A DRONE-LAYER.

In THE AMERICAN BEE JOURNAL for July, Dr. Bonney writes: "Finding a queenless colony in which a drone-layer had developed, I wanted a quick, easy, and certain way to separate the bees from the criminal, so proceeded as follows:

On a piece of board which effectually closed the entrance of the hive I put a small wire bee-escape, open-out; then from another hive took a frame of brood and put it into a hive with three other frames and a light division board and set the hive with a 3-bee entrance almost in contact with the cone bee-escape.

The bees were very active, carrying in pollen and food, and not being able to get into the parent hive naturally went into the other, and finding brood, proceeded to start a queen cell.

I assumed that the drone-layer, like a laying queen, would remain on the combs, at any rate until the bees were about all gone, which proved to be the case. The next thing was to pick out half a dozen drones, put them in with the bees in the new hive, then a little formaldehyde finished the drone-layer and drones."

HONEY IN DIET FOR STRENUOUS WORK.

In the July issue of GLEANINGS, J. E. Crane writes: "The papers are reporting these days in great headlines of the success of crossing the Atlantic in a flying machine. It was just about a hundred years ago that the first steamboat crossed from America to Europe, and this was the cause of great rejoicing; but it was twenty years later before ocean steamships were a success. It may be as long before flying across the big pond will be safe. But the fact of special importance to beekeepers is that the food supplies of some of these airman consisted of chocolate, bouillon, water, and honey."

Proceedings of Associations and Clubs.

PRICES OF HONEY.

At the meeting of the Council of the **B.B.K.A.** on July 17th, "it was resolved that beekeepers be advised to charge not less than 2s. 6d. per lb. for extracted honey, and 3s. each for sections without containers." Even at that price honey does not remain a luxury as used to be considered in this Country. The war has compulsorily placed it in the category of "articles of diet" and it is destined to remain there. Its nutritive value, specially to children, is remarkable. Therefore even those beekeepers who sin in depriving their bees of almost every ounce of their natural food should not be made an excuse for punishing the mass of beekeepers or rather, for starving the bees, the friends of the fruit grower, the human consumer, and especially children and invalids.

We know of small beekeepers who have got more honey than they wanted this season, but they are few. We know also of cases of wholesale starvation of bees apart from starvation swarms; but these again are not common. The general situation at the end of the season in many districts is nearly the reverse of its beginning—bees living with difficulty from hand to mouth. The ten pounds allowance, as semi-officially announced, is therefore too ridiculous to laugh at unless it is to be followed at a later stage by a supply of the objectionable candy. We trust, but with little confidence, that the report is unfounded; and in any case hope that our colleagues, Editors of the Bee Press in this Country, will take a firm attitude towards this possible new blunder.

SUCCESSFUL RE-STOCKING IN DERBYSHIRE.

We learn with satisfaction that the Derbyshire Re-stocking Scheme, under the able management of H. Hill, has resulted successfully, the original stock being composed of six Dutch colonies and six Italian queens. The bees, in spite of passing difficulties, fulfilled their reputation as prolific breeders, and have done well. The queens, though late in starting to lay, soon amended their ways, and, with one exception, have since done splendidly—that one unfortunately disappeared after being successfully introduced.

Up to date, all orders have been executed, 39 four-frame nuclei having been distributed. Reports to hand are very satisfactory, and in some instances where deliveries were among the earliest, the nuclei have again split. A six weeks' guarantee was given with each nucleus that if disease broke out, and bees were lost, the cost would be refunded.

A NEW MOVEMENT AT CRAYFORD.

Kentish beekeepers have shown much faith in the past in the power of co-operation, and they still add fresh practical proofs of their belief in their worthy cause. Under the leadership of W. J. T. Butcher, a new co-operative association has been formed at Crayford with the idea that each member should take part in the work. A Honey Show to be held on the 16th of August, has already been decided upon, and the Association are now the proud possessors of a breeding apiary of eight colonies.

ACTIVITIES OF THE APIS CLUB.

During this season the activities of **The Apis Club** consisted amongst others in: (1) educationally publishing and financing THE BEE WORLD, assisted in a **small** measure by a **small** section of the TRADE, in spite of an appeal to the co-operative efforts of the whole TRADE, which sadly enough—and the subject bears this repitition—seem to have very little interest in other than the sale and purchase of goods, unlike the case of more advanced bee communities in other Countries; (2) the training of pupils at reasonable fees and in some cases at no fees whatever, at a **Training Apiary** of six colonies, apart from frequent observations and manipulations at a **Breeding Apiary** of two hundred colonies; (3) the establishment of an **Experimental Apiary** of ten colonies, where much work has been done in testing various strains and in conducting selective breeding on scientific principles, apart from elaborating new types of progressive hives and appliances, including the careful testing of the aluminium comb and research work on its improvement which may be put early into effect, should sufficient enterprise on the part of British manfacturers be met with; (4) the liberal supply to members of the Club at ten per cent. discount below standard prices of bees of the finest quality, both pure and "hybrid" American, Dutch, Italian, selected Native, and other strains, whether as queens, nuclei or stocks. The high quality of bees supplied has been more than appreciated by members, some of whom travelled long distances for the purpose of visiting the Club's Apiaries, and voluntary paying the compliment to its workers in the shape of donations to the Club and of educational propaganda on its behalf. The stories that circulate in this and other Bee Clubs regarding the degradation of the Market by the impudent and shameful practices of the "professional profiteers" are such that they almost sound as fairy tales. Whilst respectable apiarists have been charging varied prices for their bees, between high and low, and according to the extent of their production, the standard of their bees, and the amount of time, labour and expense spent on the improvement of their strains by research work, an apparently growing class of evil-doers have been trapping many novices and selling diseased bees which are worse than useless, using as their "bait" low prices that are in reality too high for their worthless goods; in other cases, charging very high prices and giving guarantees that are not meant to be fulfilled. We repeat our remark that County experts and other influential apiarists will do an invaluable service to the profession by helping to expose these frauds. It is certainly high time that the epidemic should be stopped; (5) competent members are given adequate facilities for **Research Work** at the Experimental Apiary of the Club at nominal fees.

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*, Limitations of our space compel us to greatly condense this and most other sections of THE BEE WORLD. With facilities for a larger and more respectable production, which is within the power of the Britsh Industry as well as of International Apiarists to establish, a better style of editing, suitable for broader and better conditions may be easily introduced.—Ed., B.W.

The material assistance offered by the Club to beekeepers in various forms has been a great inducement to an ever increasing membership; amongst the members, being leading figures of multiple Beekeeping Associations. But the amount of subscription fee whether to THE BEE WORLD or to **The Apis Club** is so low, and the return to the members is so high, that no minimum compensation can be obtained except by considerably multiplying the membership list, which the secretary to the Club trusts will be felt by every member as a moral duty, and a maximum effort by every one of them towards this end may be attempted and accomplished. The work of the Club and the paper being entirely non-commercial and purely educational, scientific and co-operative, members may well feel that each of them has to lend a helping hand in the constructive work which is being accomplished. For these reasons, there is no contemplation of raising the subscription to the B.W. which should remain if possible at its present low level so as to remain within the reach of every class of apiarist, in spite of future improvements; but to effect this, it is most essential to augment the advertisements section.

THE CASE FOR INSPECTION.

In his report to the supervisors, M. A. Saylor, Glenn County Bee Inspector, U.S.A., mentions: "The inspector should not only be able to detect and treat the bee diseases, but should be a leader and an educator in the correct management of bees. Although I have found the brood diseases in a considerable number of apiaries, the situation is much improved over last year. The bee diseases are very similar to the infectious diseases of other animals. We cannot completely eradicate them. But we can by well directed effort keep them under control."

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Our Book Shelf.

MODERN QUEEN-REARING.

By M. T. PRITCHARD.

Queen-breeder for The A. I. Root Company, Medina, Ohio.

The writer of this valuable booklet is a specialist in his profession, and with a unique experience. His position is a testimony in itself. But we do not let this impress us. We have critically examined his little work only to find it a great scientific production profitably condensed, and an excellent companion to the works of Sladen and Pellett.

Short of natural queen-rearing by a strong colony of bees—which generally presents a standard of perfection—specialisation is inevitable. A smallholder may do well not to discard capped queen cells, removed from a good colony of bees, but to carefully incubate them, and to utilise or sell the selected virgins that hatch out. But generally speaking, he is not fit for commercial queen-rearing. To the commercial queen-breeder, therefore, this scientific work is primarily intended, although the system advised is no doubt workable with training in the hands of the general public.

The Publishers give a brief but an instructive preface. They imform us that "Mel Pritchard has raised for them something like 20,000 queens" and that "the methods described are the same as Mr. Pritchard uses, and which long years of experience have demonstrated will yield not only quantity but quality. With the help of a single assistant, in about three months he raises from 3000 to 3,500 queens. While a greater number **might** be produced the quality would be impaired. When we say that the queens that Mr. Pritchard rears have demonstrated their ability to produce crops of honey, and to resist European foul brood, we have said all that needs to be said in regard to quality.

There are some fancy methods that will give a larger number of queens, and there are some tricks of the trade that Mr. Pritchard might have given, but which, in the hands of the general public, would not work. He has been able to do anything that any queen-breeder has done or can do. But he has described only those methods which are reliable, and which anyone who reads the directions carefully can carry out for himself, provided, of course, he has ordinary ability.

It is but fair to say that very few honey producers will make good queen-breeders. It is much more of an art to produce good queens than to produce a crop of honey. Some may contradict this; but remember we say **good** queens. Anyone can rear scrubs, but only a very few can raise queens of quality. The difference between a set of good queens in an apiary and poor ones is just the difference between a good crop and a medium or a poor one."

We hope it will not be a long time before such principles are widely re-echoed here. At present we note with regret that the governing principle, almost everywhere in Great Britain, and with few exceptions is "cheapness before quality."

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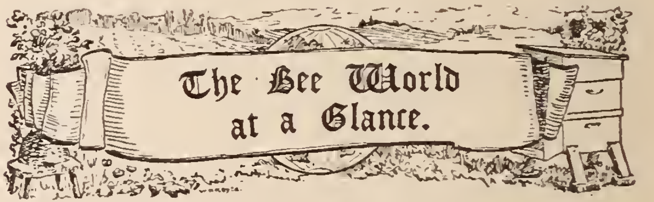


The Bee World at a Glance.

DEATH OF DR. MC CRAY.

The **Am. B.J.** reports the lamented loss of Dr. Mc Cray, who together with Dr. G. F. White will be remembered as author of the Washington Entomological Department Bulletin, 'Diagnosis of Bee Diseases by Laboratory Methods.' Dr. Mc Cray had lately been director of the Laboratory of Hygiene of the State of Montana and was conducting investigations on Spotted Fever. It is believed he contracted this disease during his studies.

U.S.A. EXPORT DISTRIBUTION OF HONEY.

The following figures compiled, from recent data supplied by the U.S.A. Bureau of Foreign and Domestic Commerce, may prove interesting to our readers.

Countries to which exported	Month of April, 1919	Since July, 1918
Belgium	143,650	224,930
Canada and Newfoundland	5,288	767,250
China	1,414	9,987
Denmark	31,834	151,759
France	244,717	1,255,698
Hongkong	464	3,930
Japan	72	1,153
Mexico	24	694
Netherlands	18,460	18,460
Norway	20,890	98,742
South America	48	1,387
Sweden	468,464	883,135
United Kingdom	102,186	5,907,615
West Indies	13	1,522
All other Countries	9,776	47,051
Total Honey	1,047,301	9,373,313

The figures represent pounds.

SENT TO 'VATERLAND.'

M. G. Lowe, of Saventhem, Near Brussels, reports to the **B.B.J.** "the Germans, I am pleased to say, overlooked my little place; others were not so fortunate, and hives, bees and wax were seized and sent on to the 'Vaterland.' I am told they extracted glycerine from the wax, and distributed bees and hives to their beekeepers. I really think that it would have broken my heart if they had taken my little lot."

A redeeming act on the part of leading German apiarists, would be to use their influence for alleviating the sufferings of their Belgian colleagues.

THE DORSET YARNER.

We are glad to note the recovery of J. J. Kettle, F.R.H.S., the well-known contributor to the **B.B.J.**, from his recent injuries which have enforced his absence in hospital. Mr. Kettle's Yarns form a regular illuminating feature of the **Journal.**

SHIPPING BEES IN REFRIGERATORS.

The noted American beekeeper, Desmuth, has practised with success shipping bees in cold chambers during hot weather.

THE PASSING OF MRS. E. A. BIRCH.

We learn with deep regret of the passing of Mrs. E. A. Birch, widow of the late Brigade-Surgeon, Lieut.-Col. E. A. Birch, M.D., F.R.C.P., Indian Medical Service, at the age of 76.

Mrs. Birch was for many years a regular contributor to the **Beekeepers' Record** on "Interesting Extracts," and was well-known for her scholarly interest in beekeeping.

A MILLION TONS SUGAR SHORTAGE.

The Western Honey Bee mentions that there are indications to show a million tons sugar shortage in the world's supply, on top of the enormous increased demand that prohibition is likely to make on our supply of sweets. "In our opinion," says the editor of our interesting contemporary, "the outlook for honey prices is anything but discouraging," but even this shortage will not account for placing the adequate food necessities of bees in this Country in the very background.

The Arena: Letters to The Editor.

EXHAUSTIVE FORAGING AND DISEASE.

To the Editor of The Bee World.

DEAR SIR,—The honey season here is fairly good, and I have colonies storing in three, four, and five racks of sections. These were taken off two hives yesterday.

We seldom miss a honey crop in this locality, but the difficulty is to keep our bees alive and free from disease. In 1918 I had a colony give 130 sections and increase to two, only to lose both in winter. What **is** the remedy? Simmins advises removing all natural stores and feeding up with medicated syrup. On the other hand, Smith recommends wintering on honey in double-storey hives as a preventive of disease. I am trying the latter method, with all stocks headed by young queens from different rearers—Penna, Simmins, Adminson, etc., with equal treatment to all. It will be a case of the survival of the fittest.

Yours faithfully,
J. M. ELLIS.

Gretna, Carlisle.
July 28th, 1919.

[We are not believers in the theory that the so-called "**over-work**" **of a queen** constitutes in itself a disease to herself or to her progeny, although her debility would possibly pre-dispose to their degeneration and sickness. On the other hand, it is clear that nearly all predominant bees in modern apiaries are prolific, that they are invariably bound to swarm if insufficient room for ovipositing is permitted, and in spite of avoiding artificial stimulation; and that so far as breeding is concerned in modern apiaries kept for honey production, "**over-working**" of the queen has no existence in the majority of instances, but over-working of the forager bees **does** exist. The presumed over-worked queen survives, but such debilitated workers cannot survive long owing to the exhaustion of their vitality. The probability is that the queen and a small proportion of autumn bees are left in their prime, and being weak by themselves, are bound to perish should the exhausted bees dwindle quickly during the trials of winter.

It follows, therefore, that no matter how good a strain of bees may be, they are bound to suffer a hopeless fate if over-worked to the limit of exhaustion. It is up to the beekeeper therefore to arrange, so to speak, the "**working chart**" of his bees. It is non-paying to employ your bees to forage till very late in the season, should natural supplies be available. Their potential value, should they survive, plus a good honey harvest, is probably greater in no few instances than a very good harvest alone, especially in these days when it is an impossibility to secure at least creditable bees sufficiently early in the spring to catch the fruit blossoms. One of the essential secrets in successful wintering is the **predominance of young autumn bees.**

There are several factors influencing **disease causation,** and we have no doubt our correspondent is in no need of our tabulation or emphasis.

As for the best winter food, we have no hesitation in advising the selection of mature honey and we prefer capped honey that has been kept in reserve from the early part of the season, as it is sure then to be mature and wholesome, and is usually of a better quality than that gathered late in the season, which may or may not be contaminated with **honey dew.**

No doubt the advise of Simmins is sound in a sense, as he is clearly aiming at fighting infection, whether due to **Nosema Apis** or to some unknown organism, but it is better advice, to suggest extracting combs of honey, medicating the latter with a suitable germicide and re-feeding to the bees sufficiently early to ensure re-capping. We do not know of any artificial food, not even crude **synthetic honey** (which in itself is superior to ordinary sugar diet) that will surpass or even equal natural honey in its dietetic value to the bees. Properly medicated honey should not ferment; and if no irritant antiseptic has been chosen, it should prevent rather than produce dysentery.

Although we admire free thinking, we cannot but entirely disagree with the idea of **wintering bees in a double-chambered hive.** We fail to see that it has any important direct or indirect connection with the prevention or treatment of disease during the winter; rather the reverse. A double-chambered hive is not indicated except when the bees are apparently overcrowded in one chamber in the autumn. But it is surprising how much smaller space bees would occupy when clustering. The reduction is often as much as 50 to 80 per cent approximately. It is advisable therefore, in the case of an exceptionally strong colony, to leave a second chamber for their accommodation until late in the autumn and then take the opportunity of one fine day (with a temperature of not less than 55° F.) and remove the latter, which may be replaced by a perforated zinc quilt as that illustrated in Fig. 10, July number, THE BEE WORLD. Such a quilt may be made with deeper rim if necessary and will answer the purpose of accommodating a good proportion of bees above the top bars of the combs, without permitting an excessive room above the cluster to serve only for the dissipation of the heat of the cluster at such a time when "heat is life to bees." Such avoidable heat will mean over-feeding on the part of the bees for the purpose of additional heat generation to compensate for the loss; and in the absence of sufficient opportunities for cleansing flights the vicious circle of metabolic poisoning will simply be inaugurated......

We have ourselves repeatedly tested wintering strong colonies in two storeys, only to find at an early period that it is unserviceable except as a temporary measure till the incidence of the clustering season. In other words, what appears to be an over-crowded brood chamber with active bees will not be so with a resting colony. Moreover, so far as the prevention of disease is concerned, it should be remembered that inasmuch as the bees depend on clustering for their protection in winter, no number of lifts used will prevent segregation and the spread of infection should it exist.—Ed., B.W.]

NOTES FROM MOROCCO

To the Editor of The Bee World.

DEAR SIR,—I am a native of your neighbouring village of Ewelme, and for about four years was a scholar at the British School at Benson (1858-1861).

I have been keeping bees here for about 26 years and some seasons have done very well with both section and extracted honey; but at the commencement of the War, I was attacked by the natives and had to close the station for 15 months and retire to Gibraltar. I then had about 12 good stocks of bees,and as I did not know whether I should ever return here again, I sold the lot with all my gear to a lady who resided near Tangier. I only got a mere " song " for the whole lot......

I returned here in November, 1915, and as things were so unsettled on account of the War, I did not think it convenient to restart beekeeping. Last autumn, however, I got a swarm and made a temporary hive out of a packing case, and the bees appeared to be doing well. But during the winter they got so weak that I had to resort to feeding and I do not think the sugar I used could have been good because the bees have done nothing as yet. I sent to England for a hive in February, and it did not arrive till so late that the season was practically over. However, I managed to stock the hive in a remarkable manner. In my garden was an old box with a lid. One day I was surprised to find that a large swarm had taken up their quarters in it and were hanging to the inside of the box lid. So I prepared my new hive with frames fitted with strips of foundation; and, gently taking the box lid with the bees hanging to it, I placed it on the top of the frames and covered it all up with a blanket and left it for three days. When I examined the hive, I found the bees had all left the box lid, which I took off, and put the quilts on the top of the frames. The bees had already began to draw out the foundation and were working well.

Yours faithfully,
EDWIN C. HATHAWAY.

Lloyd's Signal Station,
Cape Spartel, Tangier, Morocco.

CROSSING AND TEMPERAMENT.

To the Editor of The Bee World.

DEAR SIR,—In my old apiary I used to have various cross breeds, and though I have often read that such bees are not good tempered, I never found them so, if properly looked after.

Pure Italians I have always found remarkably quiet, but large breeders, and possibly more inclined to swarm than those smaller and darker in colour.

I have always been of the opinion that the **old** English native was a rather smaller bee than was often met with and which I looked upon as the German bee, and which was rather brighter brown in colour.

Yours faithfully,
(Rev.) MARCUS W. B. OSMASTON.

Langar Rectory,
Barnstone,
Nottingham.

BEEKEEPING IN PORTUGAL.

To the Editor of The Bee World.

DEAR SIR,—Beekeeping in Portugal is in a very backward state, most of the bees being kept in **box or cork hives**. The latter are simply cylinders of the bark as slipped from the tree, with a round of the same covering it, all cracks are plastered with cow dung and clay. I must say the bees seem to thrive in these hives, though naturally the yield is small.

The "**cresta**" is made in September in this part, and the "**abelhiero**" comes round to the different apiaries provided with a long curved sharp iron with which he cuts half way down from the top, leaving the rest for the bees to winter on.

Our winters are very mild; there is scarcely one day on which the bees do not fly, and there are always flowers for them, principally Eucalyptus, during the winter.

Bee diseases are unknown, though the wax moth is a trouble. The people here think the Italian race of bees will bring foul brood. I hope not, as I have just invested in two Italian queens, as I was not at all satisfied with the working of the native bees.

Yours faithfully,
G. B. MITCHELL.

Cerrado da Eira,
S. Pedro de Cintra, Portugal.
July 18th, 1919.

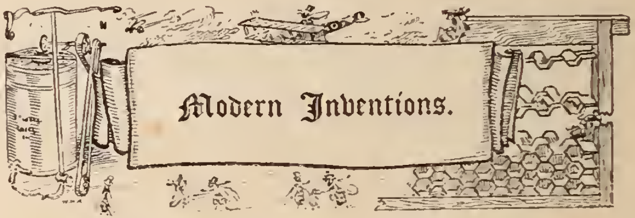
TRAPPING EARWIGS.

To the Editor of The Bee World.

DEAR SIR,—In my experience, the only successful way in an apiary for keeping earwigs down is to trap them in small flower pots with a little dry grass or moss in them. When I grew dahlias, I used to keep a flower pot with a little grass in on the top of each stake and go round occasionally and shake them out into a pail containing a little paraffin, which I believe to be the general way with all florists.

Yours faithfully,
JOHN P. GEE.

Summertown Farm Nurseries,
Oxford.
July 28th, 1919.


Modern Inventions.

THE BARBEAU SYSTEM OF QUEEN-REARING.

Writing to the **Am. B.J.**, E. Barbeau, of St. Eustache, Quebec, describes a simple system of queen-rearing of his own invention. It consists of: (1) one cylindric punch, (2) one pusher, (3) waxed aluminium capsule tubes, (4) royal cages.

The cylindric punch is used to cut, out of the comb, one cell containing a larvae one day old, to have the latter developed in a queen cell. In order to use it with success, it is advisable to rub a little vaseline on the inside and outside of this punch, so that it will not stick to the comb.

The waxed aluminium capsule tubes are used to receive the cells from the punch after they are cut; you simply push the cell from the punch into the capsule tube, by the use of the pusher.

It is not necessary to put any royal jelly in the cells to induce the workers to start queen cells out of them, when conditions are right. They do it of their own accord.

The royal cages are used to keep the queens prisoners after they are hatched.

Nothing is easier than these operations, says the inventor. After preparing 30 or 40 capsules or more, you screw them into a comb which you place in a colony which has been made ready for queen rearing.

IMPROVING THE "DUMMY" FEEDER.

The Doolittle " Dummy " Feeder has for long been recognised as a very serviceable, economical and simple invention. For feeding a nucleus temporarily accommodated in a travelling box it is certainly ideal. As put on the market, it has however certain gross defects, such as the inconvenience in filling, with the possibility of drowning several bees, the interference of the feeding bees with

[Continued on page 56.

The Success of the Aluminium Comb

at the Research Apiary of THE APIS CLUB.

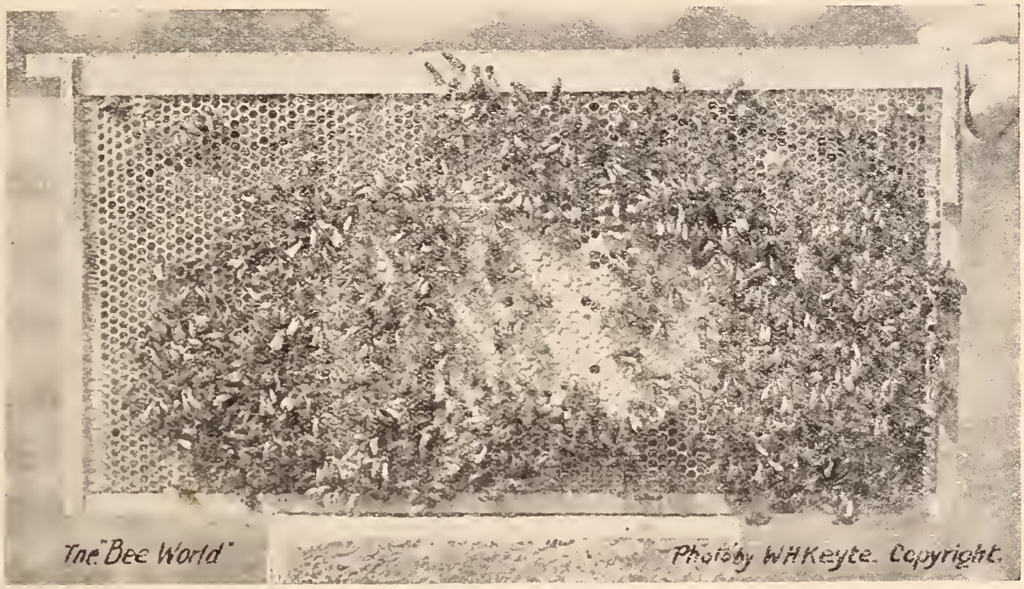


Fig. 11.
A metal comb—from an experimental colony—containing eggs, larvae, capped brood, an incomplete queen cell (shown in the upper right section), honey, pollen, and a proportion of the covering bees.

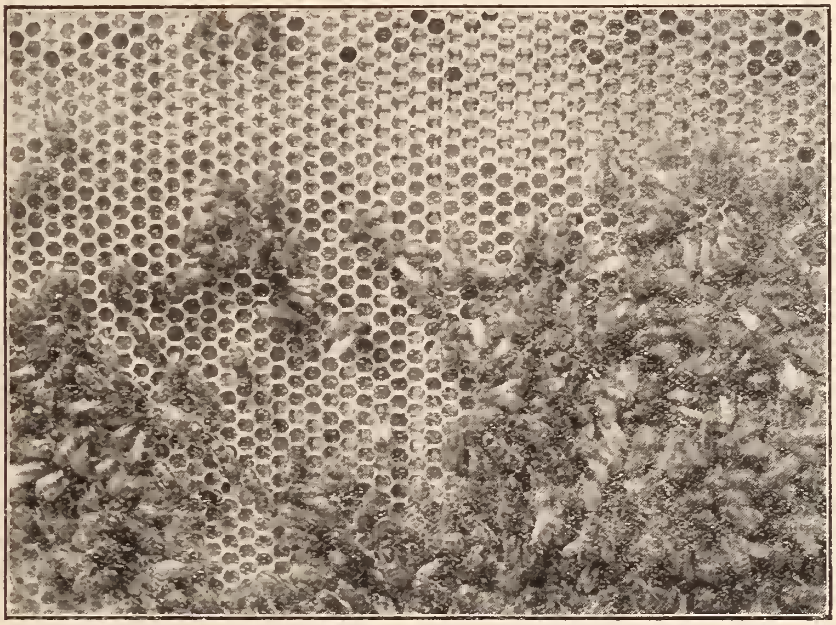


Fig. 12.
Note the shape of the cells and the presence of larvae in the central area of the comb, also the presence of food as indicated by the attitude of many bees.

In "side combs," where the bees were not enterprising enough to fill the opening at the base of every cell with wax, the queen avoided laying for a while in the non-perfected cells; but later, pearly eggs made their appearance in the virgin silvery receptacles, and afforded a contrast with those that were already capped, also with the brown-coloured cells from which hatching bees have emerged. We noticed that it needed some sight training, even in the case of a few experienced apiarists, to distinguish the presence of eggs in new cells. Once the degree of light reflection and the contrast of colour is appreciated, no further difficulty is met with in this connection.

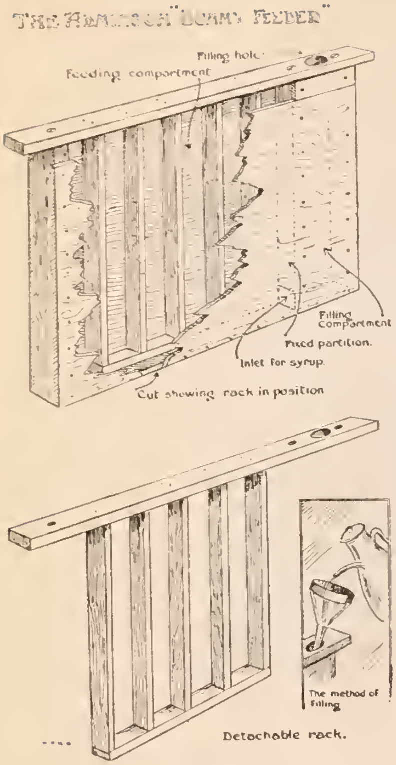
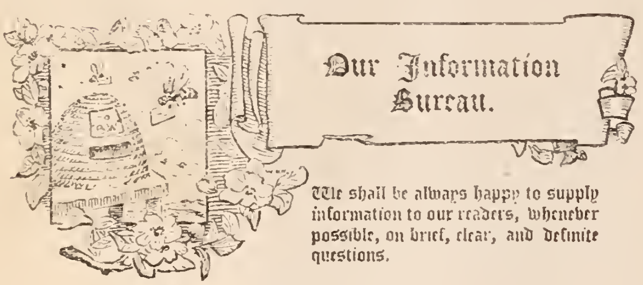


Fig. 13.

the operator when filling during unfavourable weather, and the like. To overcome these inconveniences and difficulties an improved "Dummy" Feeder, as illustrated in Fig. 13, has been introduced by Messrs. Adminson Ltd., of Benson, and has been manufactured by Messrs. James Lee & Son, of Uxbridge. Its features are: (1) a **filling compartment** which is independent from the **feeding section**; (2) a detachable rack which permits of a wide surface area for a comparatively large number of bees to attach themselves to when feeding—as an alternative, which is less advantageous a float may be substituted in the feeding compartment; (3) metal lining for the prevention of leakage, although well-made wooden feeders, previously soaked in water before use, are generally fit afterwards for regular employment when syrup feeding.

The cost of such a feeder in proportion to its advantages is small. No doubt any good manufacturer of beehives and appliances can neatly make it.

◆



Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

REMEDY FOR BEE STING.

Q. I am rather sensitive to the effect of a sting by a bee or a wasp, and therefore always anxious to avoid it, and, if unfortunate to get it, I endeavour to treat it, but usually without much benefit. All possible remedies from the "blue bag" to "Anti-sting" have passed through my hands. Can you recommend to me a really useful preparation?

A. Perhaps our correspondent will not mind adding to his list of remedies a piece of ordinary washing soda. This carried in the pocket of the apiarist is most serviceable when required in an emergency. Just dip it in some water and rub it without delay over the skin wound after the quick removal of the sting. At least in our experience we find it useful for soothing the aching hand of an unfortunate visitor......

THE "HESS" INTRODUCTION CAGE.

Q. It may interest you to know that I have practised with success, introducing new queens on frames of capped brood without adhering bees and temporarily accommodated in perforated zinc cases. I think my idea is worth your trial.

A. So far as the idea is concerned it is not new, nor is its application. There are several such "cases" or "cages" on the markets abroad and especially in America, and are made in most instances of framed stout wire. Although very serviceable, these are rarely employed in this Country. The "Hess Safe-introduction Cage" is a popular example. It is described as "a cage which admits a frame of brood where a queen can be immediately released, which ensures the introduction, no matter how valuable a queen. Excellent also for caging a queen while rearing a batch of cells; for making a 1-frame nucleus, etc." It was originally introduced by H. M. Hess, of Bishop, California, U.S.A.

DISCOLOURATION OF WAX.

Q. I have some frames fitted with foundation from last season. They were bought from a leading manufacturer. To my surprise the colour of the wax has become rather dark brown, after storage, instead of retaining its original tint. Do you think the wax was adulterated? Is it safe to use it?

A. Adulterated wax can easily be detected by chemical and other tests, and no leading manufacturer would fail to discover or would care to sell such an article. We have not seen however a sample of the wax and we cannot therefore give a definite opinion. It may satisfy our correspondent to know on the other hand that the purest beeswax will become discoloured in time if not stored in a dark place.

HONEY VALUE OF BUCKWHEAT.

Q. Is buckwheat counted as a honey plant in this Country?

A. Very little buckwheat is cultivated in Great Britain and therefore will not count as a British honey plant. There is no doubt about its honey value, in spite of variability under different climatic conditions. It is also a splendid fodder. Buckwheat honey is rather dark, but is rich in sugar contents and has a strong flavour. If properly cultivated and attended to, it should be more profitable to the farmer than red clover and would in a way improve the soil. Touring officials of B.K.A. can do a good deal of service both to the land farmer and to the bee farmer by diffusing such information.

NON-HATCHING EGGS.

Q. I have read about eggs that do not hatch and have had the same experience myself. Can you offer an explanation or a remedy?

A. It is possible to get defective eggs (from a biological point of view) which will not therefore survive. The queen should be destroyed in case their proportion is appreciable. On the other hand, a prolific queen heading a small nucleus may sometimes excessively oviposit, and in the absence of an adequate number of covering bees, it is feasible to get an insufficient temperature within the hive for incubation.

THE BACTERIOLOGY OF BEE DISEASES.

Q. Might I suggest that you publish a series of articles on the bacteriology of bee diseases in the light of present day knowledge, giving brief directions for cultivating, preparing slides, and staining? ......I think they would be most useful and instructive.

A. We agree that such articles would be useful to the progressive beekeeper, but we think that little gain would result from brief notes. Anything short of detailed information in popular language and with adequate illustrations will only puzzle the non-scientific reader.

Just as we prefer to stop the issue of this publication rather than permit it to degenerate, so we do believe in the economical and educational value of "quality" alone. And at the present insignificant financial support which THE BEE WORLD has received from the Bee Trade in this Country, which is quite a contrast with the moral support of leading apiarists everywhere, and of numerous educated readers, we can only regret our inability to undertake this among the many other functions that otherwise we could have gladly assumed.

⁂ The Editor regrets his inability to utilise any space for answering familiar questions that are fully answered in all leading bee manuals. Many correspondents dealing with such questions had to be replied to privately since the inauguration of THE BEE WORLD, but we do not propose to continue this practice in future, owing to our over-occupation, apart from the decided wastefulness of such labour. We shall remain prepared to answer, to the best of our efforts, questions of interest that are generally not adequately considered in text books.

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their school or nationality, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

Publishers:

The Apis Club, Port Hill House, Benson, Oxon, England: An International Institute for the service of Modern Apiculture, and for fostering a genial spirit of scholarly brotherhood amongst bee-keepers of all countries, with the co-operative object of promoting their educational and material interests.

⁂ Membership of the **Apis Club** is open to all practical apiarists everywhere, as well as to all lovers of the Honey Bee. Annual Membership Fee: 7s. 6d., and includes free delivery of this Magazine, which is issued only to members of the **Club**.

Vol. I. No. 4. SEPTEMBER, 1919. Monthly.

Editorial.

THE METAL FOUNDATION.

People are often apt to attribute to bees more than they are capable of, and to look upon their wonderful little heads as diminutive human heads. At the same time, the modern apiarist, who should be capable of thoroughly studying the habits of his winged friends, and of persuasively using their instinct to the best of his advantage, is equally apt to get satisfied with what he has accomplished, to become a second type of a conservative who will look probably through the long monotony of his study, on his more progressive colleague as a crank, and will not believe that anything can be added to the wealth of his knowledge.

Naturalists have been contented with the present development of the observatory hive, although even admitting that the construction of a one side glass comb is a technical impossibility in the absence of adequate capital for experimental work, and in the presence of much apathy, plain **glass foundation** has never been made use of for the purpose of developing a more advanced and complete observatory hive than hitherto attained on the other side of the Atlantic. We attribute this principally to the widespread belief in wax foundation as almost an essential bait for bees to take to an observatory hive With plenty of young bees—which need not necessarily be headed by a queen at the commencement—supplied to a single-frame observatory hive in which a frame fitted with plain glass foundation is all its equipment, and with regular artificial feeding, regular wax building of a respectable number of worker cells should not be a difficulty. Once this is obtained remove this particular frame, shake the bees, and supply another frame. When the second is equally a success, the apiarist will be fully provided with the principal material for constructing **the most advanced and most complete observatory hive.** One side of each glass sheet should be cleaned of its wax cells and rendered suitable as one of the actual glass walls of the observatory hive. With good workmanship and correct spacing, a successful observatory hive may then be fitted, which will be acceptable to any bees. It will have no frames but naturally built cells on the glass walls of the hive, with a correct bee space between one side mass of cells and the other. At a glance the naturalist can study the mysteries of the developing larvae, once a small colony is established and the hive is in working order

The same apathy and misbelief which have prevented the development of such an observatory hive as we suggest, have also prevented the development of the **metal foundation**, in spite of the presence of both metal and mill.

Conservative commercialism will endeavour to attack science and commonsense. We shall be assured that there is nothing superior to the nuisance of broken wax combs, to the defections of wiring foundation, to the excellence of old dirty combs, and to the like. And furthermore, those who have been sneering at the idea of an insulator hive, will come forward to defend the very principle which they ridiculed. The plain sugar box hive, and the boasts about the survival of their bees in spite of negligence will be forgotten; and they will argue that metal foundation on which full wax combs are built will dissipate the heat! But how? From one side of the comb to the other? And when bees are established on both sides, and wax is so much advertised as an excellent non-conductor of heat, and when stores serve as retainers of heat? But granted that a hopelessly small degree of heat may be dissipated towards the ends of the combs, it only serves at worst to make that part of the hive, in which bees are not residing for the time being, not so cruelly uninhabitable. But we very much doubt that any appreciable degree of heat will dissipate and succeed in accomplishing this. The life of the colony in winter is greatly dependent on their congregation for mutual protection. If this be ever much jeopardised the fate of the colony would be sealed. **Preservation of life within the hive is not so much dependent on insulation from an internal enemy as on insulation from an external one.** Their deadly peril in winter is not an infinitesimal dissipation of heat inside their home, that will merely help to regularise its temperature, but the severe cold which if not counteracted by adequate packing and insulation, will materially contribute to the vicious circle of a ruined life.

THE STANDARD FRAME.

Granting that the ultimate object in keeping bees is the production of honey; this should influence rather than discourage the introduction of a frame which is sufficiently **large** for the breeding requirements of prolific strains, and sufficiently **deep** for their winter protection, taking into consideration their clustering habits under unfavourable circumstances. Otherwise what is the gain of benefiting from bees during the season, only to lose them during the winter. The large frame is sufficiently recognised as an advantage, but the deep frame is not. In America, the noted apiarist, Demuth, places the hive on one end during cellar wintering and thus shows his belief in the great advantage of a deep frame as a safeguard against **preventable starvation.** The **Demuth Method,** however, has distinct drawbacks. A markedly deep frame (of a sufficient large cell area) is the logical outcome of a scientific and practical consideration. But commercialism will stand in its way It is amusing to hear any apiarist who boasts about his practical experience, and who advocates a " minaret " hive and the " skyscraping " method indulging in the discussion that bees will not ascend to the lifts if deep frames are employed in the brood chamber.

If only a modification of the present British Standard Frame is to be introduced, we agree that it should be in **depth,** no great sacrifice being borne by adding an eke to the present standard hive. On the other hand, should a distinctly deep frame be preferred—for no fancy, but for practical and scientific reasons— the stock box of a W.B.C. hive, supported on a box of the desirable depth, can be made to take two sets of such deep frames with a respectable aggregate cell area. A suitable economical middle support for the top bar ends may be fitted. There is no difficulty in manipulating a deep frame, provided it is not too heavy; and with the introduction of metal foundation and metal combs, some difficulties of production and doubts as to consistency disappear.

QUEEN INTRODUCTION.

The pipe-cage method of queen introduction on which we publish with comments an excellent letter from the pen of our friend and collaborator, Mr. Herbert Watts, one of the champions and breeders of Italian bees in England, deserves our repeated emphasis regarding utilising the method for more than what was originally intended for it. Our modification is **not** to remove the old queen, but to leave her to carry out her function until the new queen has become a common object in the hive—a week of confinement **if** necessary will not injure her. When this is accomplished, the new queen may be released **simultaneously** with the removal of the old one.

Should the introduction be carried out carelessly during the robbing season, and robbers succeed in conducting a powerful campaign against the colony, the fate of both queens may be sealed, since the robbers are capable enough of destroying the comb, including the wax foundation, and of playing havoc with the body and limbs of the Royal prisoner. This will never occur, however, with combs built on **metal foundation.**

It is a matter of opinion as to whether it is best to have the cage fitted over emerging brood and honey or over the latter alone, but what is most important to observe is to avoid much oozing honey from the cells within the cage, a slight injury to the cappings of one or two honey cells will suffice, otherwise the queen may suffer.

A comb on which a queen is caged must be accommodated in the warmest part of the hive. The removal of the cage should be conducted by a careful semi-rotatory movement. After taking so much care in queen introduction—and yet without previous dequeening—the general result should be most satisfactory from all points of view.

THE WASP PERIL.

From different parts of the Country we learn that wasps have been playing havoc with the fruit crop. In no case however did this induce them to give up their annual campaign against the poor bees. In some cases their audacity has reached such a degree that they took full possession of hives after destroying the occupants. Weak lots of bees in some cases have been compelled to swarm in order to save themselves from destruction. Strong stocks have been, at least, greatly disturbed and have lost some brave fighters.

In the " British Beekeepers' Guide Book " Mr. Cowan recommends the old-fashioned and effective wasp trap, namely, the hanging bottle. " Bottles partly filled with sweetened beer, placed near the hive when wasps are very troublesome, will catch many of them." It is a justified testimonial, but it needs one qualification. It is essential to have a **narrow-necked** bottle (e.g., a medicine bottle), in order to catch a **maximum** number of wasps, although even a honey bottle will not be a failure, but a certain number of wasps will manage to escape from it. The former has the only disadvantage of being difficult to clean out

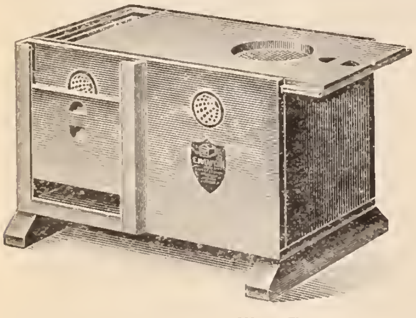


Fig. 14—Taylor's Wasp Trap.

Where beer is not available, syrup may be employed at the risk of a few bees also being trapped.

We do not know, however, of a device for catching these yellow thieves and murderers which surpasses or even equals **Taylor's wasp trap.** We believe Mr. Taylor was the first to make use of the cone escape for this purpose, and his elaborate and yet economical appliance which has no place of mention in practical bee manuals, should be considered one of the **essential** equipments of every modern apiary. It is capable of catching wasps by the hundred, in which their ultimate fate is starvation death.

The popular advice regarding tracing wasps to their nests is not an easy task to accomplish, especially in the country, where they find adequate shelter in the fields. Their high speed of flight and their irregular movements will often help them to out-manœuvre the tracker. To the busy apiarist nothing excels a modern wasp trap or a number of them in a large bee farm. They can be used year after year with equal efficiency. It is true that if you can find out the nests, you will be able to get rid of the breeding nurseries, but complete or appreciable success in this direction is never possible where the nests are widely scattered in the fields. The task of search may be profitably left to the boy Scouts.

THE BEE QUACK.

In a recent issue of **The British Bee Journal,** Mr. Herbert Mace remarks: " Isn't Dr. Abushâdy rather beating the air when he inveighs against bee breeders who are out to get rich quick ? If the exalted profession to which he belongs, with its vast resources and its unqualified importance, has not succeeded in getting rid of the quack, can we expect to purge the humble beekeeping community of the same evil ?"

We do not expect that such a triumph will be achieved, but we have no doubt that a good deal of improvement and refinement may be introduced through the educational collaboration of bee men and women, who have at heart the cause of beekeeping and the importance of establishing and maintaining a high standard of dignity for its profession.

When there is such a wide-spread epidemic of pretence and " smartness," of virgin degenerate queens supplied as the finest fertiles, of diseased bees boosted as immune, of mongrel strains sold at profiteering prices, and of so-many other scandals that are degenerating the British Bee Market, it is difficult to be silent. We have had a bitter taste of it ourselves, but unfortunately we possess the defect—and sometimes it seems indeed to be a great defect—that we are not quarrelsome.

The British Bee Press has done a great service by exposing this irregular practice. No British apiarist who has pride in the excellent standard of most branches of British industry can but endorse the indignant attitude of the Press. Unfortunately it has had an inevitable reaction. A spirit of distrust is growing, and the bee quack, whatever his cloak may be, is taking full advantage of it. He will not only attack his confederates, but also the best breeders of every Country, and will assure his hearers or correspondents that had they only troubled to let him know of their requirements, their great blunder would never have happened. The experiment succeeds from the point of the trade canvasser, and the discouragement of the bee keeper is repeated, with disastrous consequence to the mutual feeling of business confidence, which is constitutional of every respectable industry.

It is not many months ago when a well-known specialist in Italian bees, whose conscientious methods and good reputation are beyond dispute, ventured, in his ignorance of the profiteering and destructive campaign of the bee quack, to defend unnecessarily his own position. The latter did not thank him, and he was mercilessly and unfairly assailed, by sincere yet misguided people. The circle of distrust widens, and no one but the bee quack profits by this muddle. Beekeeping itself certainly does not gain. Is not this state of affairs sufficiently disquieting ?

WINTER LOSSES AND SPRING DWINDLING.

We are again indebted to our independent critic for the following remarks in the same contribution : " I am not sure that Dr. Abushâdy's further exposition of the heating theory carries him any further forward, and there is a point in connection with it, in his latest contribution, which merits closer examination. The good doctor refers to the losses of bees during the winter, and suggests that numbers are reduced very heavily by February, but that the bees may clear away bodies between that time and May. Surely, this is straining facts somewhat. What attentive beekeeper has not seen bees busy on every favourable day from January onwards, removing the fallen ? I know that in some manuals the novice is directed to insert a wire occasionally during the winter to remove dead bees. Never in my experience did I find it necessary. Moreover, I have always been an advocate, in spite of adverse criticism, of early examination, and there have been few seasons when I have not found it possible to spring clean my hives at the end of February. And it has been my invariable experience that up to then there has been no undue loss of bees. It is between that time and the final—if it can ever be said to be final—arrival of fine weather, that the losses occur. It is when bees of considerable age go out to face the treacherous weather of early spring that the greatest proportionate losses occur."

To the first unqualified criticism by Mr. Mace we cannot of course reply. As for the rest of his remarks, they have no other meaning than his eagerness to emphasise that he does not belong to the predominant class of apiarists in this Country. This however does not influence our argument ; otherwise our views are identical with the exception that he does not differentiate between winter losses due to faulty preparations for wintering, including the excess of old bees in the hive, and between true Spring dwindling, the victims of which are both old and young bees, and which is principally influenced by treacherous early Spring weather.

THE BEE MASTER.

Not the indifferent possessor of many colonies is the Bee Master. They work for him but he does not, and he often spoils their work. He may get in spite of this a good surplus of honey,but the credit is surely theirs. Of course he distributes his colonies amongst many suitable farms over a wide area or he moves his bees, and he deserves some credit for his commonsense.....But there is a wide difference between this class of a beekeeper, who may get a good surplus under favourable conditions, in spite of his ignorance and primitive methods, and the modern apiarist, great or small, who may work under the most unfavourable seasonal conditions, and yet succeeds in achieving a fair measure of success. The latter and not the former is certainly the Bee Master. He thoroughly knows the identity of each of his stocks, their approximate manipulative requirements under various conditions, and the psychological moment when their attention and force may be concentrated on a certain object. This type of apiarist is not common. He is the product of open-mindedness, of interest in his work, and of a live desire to learn and experiment and never to be satisfied with what he has achieved.

Granting that a considerable number of beekeepers in this Country are not truly professional, it is the duty of the Bee Press to raise their standard of knowledge, to make them bee masters in spite of their being amateurs. The endless repetition of text book literature will not stimulate a spirit of research and will only create and maintain a class of school children.

There is a tendency amongst the breeders of bees, and especially amongst queen-rearers, to consider themselves alone the masters of apiculture. We admit that their task is intellectual and scientific, if conscientiously carried out, but we must point out that the task of the modern honey producer, who thoroughly knows his work, is far from being simple manual labour. The Bee Master is a term expressive of a certain standard of knowledge and practice, and it is equally applicable therefore to the capable creator of desirable strains of bees, and to the skilled apiarist who successfully achieves (both under favourable and unfavourable conditions) the ultimate object of all beekeeping endeavours, namely, HONEY.

DRIVEN BEES.

Unlike a swarm, driven bees come into prominence generally at the end of the season ; their most important use is for enforcing weak lots of bees possessing good queens ; and although it is highly desirable to have for this purpose as many young bees as possible, the practice is nevertheless to be encouraged, irrespective of the quality of these bees, so long as they are healthy and vigorous, since the main object is to raise a greater society by union for the conservation of the life of their community through the most trying period of the year. The alternative for discarding the practice of driving, so long as skeps without supers are still with us, although much on the decline, is generally the inhuman and ungrateful practice of the sulphur pit.

THE LAW IN BEEKEEPING.

Dr. Jackson Wolf contributes an excellent article to the current number of **Bee Craft** on this important subject. It should not be missed by any of our readers.

The following remarks on the **Liability of Railways for loss in carriage of Bees** is of special interest : " Railway Companies (apart from special War legislation) are common carriers, and therefore bound to receive bees for carriage if properly packed. Bees should be consigned as such. Apart from any special contract to the contrary, railway companies are liable for loss arising from injury to the bees whilst in transit, or from unreasonable delay in carriage. The company would not be liable if the loss arose through defective packing of the bees, unless probably the defective packing was apparent when the bees were received by them and the company was aware of the defect. Like many other matters, Law is rapidly degenerating into common sense......"

Our young and delightful contemporary, which we are pleased to give a repeated review, is the official organ of the Kent Beekeepers' Association. We understand the membership of the Association is not limited to Kentish apiarists. Considering that **Bee Craft** is only distributed to members of the Association, the periodical in itself is worth the support of our readers who are non-members of it. Size alone does not count in journalism, and taking as an illustration the comments of our contemporary on **Nosema Infection** (which we are pleased to note are in full harmony with our own comments on Dr. White's report mentioned in the July number of THE BEE WORLD) at a time when there is a great tendency towards reaction, we can well appreciate the educational service of such a bee magazine.

Beekeeping Societies in their educational propaganda are rendering an invaluable service and yet a thankless task. Even the **B.B.K.A.,** amongst other leading associations, did not escape from the shameful attacks of trade canvassers and their disciples, who want to know where their few shillings " go." Apparently two shillings and sixpence for **The Beekeepers' Record,** the official organ of the Association, are considered a " price " for this literary work, the educational value of which is obvious to any one who appreciates the extent of reform needed for the general benefit of British apiarists. In **Bee Craft,** there is another example of splendid educational work, and we do not consider it out of place to associate our reference to Dr. Jackson Wolf's article with yet another tribute to the valuable services rendered by our colleagues.

OUR PARTING FRIEND.

Our humble friend, the drone, is due to part this month if he has not already parted, even from the largest modern apiary in Europe where queenlessness is not overlooked. He is usually the subject of abuse. Very few indeed appreciate his domestic and racial rôle.

An observatory hive will clearly show you the drones clustering over the brood. There is more weight in the suggestion that they help in brood incubation than in contending that they benefit by the animal heat of the brood. The drone is a big fellow, and one who carefully looks after his meals. Although an example of idleness, his metabolic heat cannot be insignificant, and it is peculiar that he often chooses the brood area for clustering.

Fig. 15.
Our Parting Friend.

In criticising a comment by John Anderson, a leading contemporary remarked that so far as heat production is concerned, the drone is valueless, since coincidently the time when he is destined to exist at least with all ordinary strains of hive bees is just the time when the hive heat is excessive. This remark is hardly correct from a modern apiarist who has pride in the general control of a colony in a modern hive, provided the latter is a model of perfection and not of cheap accommodation. Under favourable circumstances, the regulation of the temperature of the hive should not be left mainly to the bees, as they have undesirable ways of their own when their patience is lost in counteracting the atmospheric heat by their method of ventilation. Such artificial ventilating devices as met with in the " J.G.D. ventilator " (which can be fitted to the floor board of any hive), the "Insulator Hive," the " Hygienic Hive " and Baldwin's " New Pattern Hive " (which is reviewed and illustrated in our Presentations Columns) are amongst the modern means for helping the apiarist to become a beemaster and not merely a keeper of bees.

It is no exaggeration remarking that with intelligent management the drones may be rendered to contribute in whatever small degree to the **incubation** of the brood whilst the workers' attention would be diverted to more important work for the time being. They need not desert a super in a cold night for instance, however the number of the deserting bees may be small. Yet, the number of drones in a populous hive is comparatively trivial, and the subject is not worth a lengthy discussion, but our point is to emphasise that the drone has a **domestic function** as well as a **racial** one. As to whether the question is worth at all any practical application, especially to the busy apiarist, is a differnet matter.

Regarding the second and most important function of the drone, C. P. Jarman tells us : " The results of breeding by selection are too evident throughout the domestic animal world to need emphasis, and experience has shown that the male has a greater influence than the female on the progeny. There is no reason for assuming that bees differ in this respect ; for the fact that drones have a grandfather, but no father, does not affect the established principle. The system of breeding our young queens from the best queen mother is a consequence of our incomplete control in mating. Given an absolutely isolated apiary, the conditions above suggested should be reversed and the best queen used as the drone rearer."

We have endeavoured in our editorial on **Selective Mating** to show that this system of mating control which is only possible to a few, and not with a great measure of success, may be superseded by a more scientific system which we venture to suggest, not on theoretical grounds, but on practical evidence.

A LESSON IN JOURNALISM

In the July number of **The Beekeepers' Gazette,** the Rev. J. G. Digges gives the following notable lesson: "Criticism of the editor and his doings are always welcome: the pity is that they come so infrequently. Editing and writing from years' end to years' end, on technical subjects, without being criticised, attacked, or abused, tends to make one's head swell, and to foster excessive self-confidence, if not impudence and over-bearing intolerance of the opinions of others. These are disqualifications which one should desire to avoid. Readers who would encourage a becoming modesty in their editor should hammer him often and hard; they should keep him in his place, nor ever allow him to think that anyone, save himself, considers him infallible. To this end we delight in criticism, and revel in a good 'scrap' when it comes. Always it has been the policy of this paper to hear the other side: everyone shall have full scope to rend us in pieces, whether we deserve such treatment, or not."

Such an admirable principle, we fear, has not been a gain to the **Gazette,** much as we note with the greatest pleasure the confidence of its readers in our able colleague, as manifested by the excellent development of its advertisements section—the only substantial source of material life for any magazine. Our heartiest congratulations therefore to our Irish friends, and not to the editor alone, for their co-operative achievement.

Our objection from a journalistic and literary point of view lies in one fact, namely that the distinguished Irish writer has adopted his principle to an extreme, with the result that much abuse and destructive criticism in place of pure literature has been permitted to appear. His correspondents secured all their personal desire, a section of beekeepers admired his Free Press, yet another big section of the British bee community well felt that such a policy is only creative of dissensions, apart from lowering the dignity of the Bee Press in this Country. The masterful literary personality of the Rev. Digges apart from his able contributors is a guarantee of a big future for his work, but to us it seems quite obvious that by tolerating an arena of "good scraps," as he would call them he is doing a great injustice to himself and to the cause which he is serving.

We inaugurated THE BEE WORLD for no object other than serving the true interests of Modern Bee Culture, and not for serving any party. Our literary party are progressive beekeepers **everywhere.** We have made this sufficiently clear from the beginning. Yet we are assured that if we only choose to establish a new quarrelsome clique—to put it in clear language, for that is really what is aimed at by these correspondents—we should have no difficulty in securing a far greater material support than has been hitherto attained. True, indeed! As to what the personal defects of some English, Irish or Scottish leaders have to do with the literature itself is honestly beyond our imagination. We have plenty of defects ourselves, not amongst which, however, is either sophistry or partisanship. We hate personal partisanship in politics, let alone in literature, and it would be a new lesson to us to understand why should a good scheme, a good invention, or a good article be treated with indifference or be made a subject of an abusive attack because of personalities.

When leading apiarists abroad express their surprise at the standard of beekeeping in Great Britain, which is foremost in many other industries, they should remember that the land of Cheshire, Cowan, Hewitt, Digges and many other pioneers does **not** lack the beemen, nor the flora, but that through the faulty attitude of its Bee Press in the past, it has encouraged the development of an army of intriguers and trade canvassers instead of co-operative reformers. In every corner of a bee district there are dozens of "experts" abusing each other and everyone else, and serving no cause other than their own. The knowledge of a type of these experts has been echoed by Mr. W. J. Gillespy, of Isle of Wight, in the August number of our contemporary. Little wonder that a Conference of leading Associations in Great Britain cannot be convened to discuss such an important practical question as the revision of the Standard Frame.

Freedom of the Press, by all means, but not to the extent of unconsciously aiding in popularising abuse......The present deplorable conditions need firm handling by our colleagues both in England and Ireland. We have arrived at a stage when many decent people in this Country feel ashamed to call themselves beekeepers

THE CHAPMAN HONEY PLANT.

In view of the recent discussion regarding the usefulness or otherwise of this bee plant, it may be of interest to record that we have again closely examined the behaviour of bees towards it during this season. We have found it much sought after by bees during fine weather, and in no case did we discover any stupifying effects. It is not a very rare thing to come across a chilled or a worn-out bee sitting on a flower, especially during unfavourable weather. There are multiple manners in which foragers meet the ultimate fate of every living organism; and there is no ground for suggesting that such accidental association of a chilled bee with this flowering plant as being due to an intoxicating element in the nectar than there is for blaming the paint of a hive for the accidental presence of a chilled bee on its porch or leg.

We cannot too strongly recommend **Echinops Sphærocephalus** for plantation in every bee garden.

SKEP HONEY.

There is always a tendency amongst many apiarists everywhere to create mysteries and what might rightly be termed "modern superstitions" about bees, instead of attempting to solve the real mysteries of the hive. Amongst the current superstitions is that old skep honey is such an exceptional treasure, that for it alone skep beekeeping on a large scale is worth a greater attention than what is at present its share. We shall not relate the old story of the advantages and disadvantages of the skep in comparison with the modern hive. Suffice to observe the ultimate fate of the skep—once the favourite receptacle for bees in this Country— on its own merits and demerits. As for old skep honey, there is no doubt about its excellence. This is due not only to its greater maturity and its consequent richness in **aromatic oils**, but also to the readiness of honey, in the same way as milk, to absorb odours; and no doubt in an old skep, honey, whether fresh or old, will not miss absorbing part of the odour of propolis in addition. Furthermore, by the orthodox method of pressing honey out of combs, and specially out of old combs, a comparatively large proportion of pollen will be mixed with it; this adds to its aroma. An exceptionally rich skep honey will not infrequently exhibit a thin oily layer on its surface in which pollen is suspended, apart from the intermixing of the latter with the bulk of the honey itself. Whilst new skep honey may have a delicacy, old skep honey is certainly coarse; yet it has its own good points, and will be much appreciated by those who could cultivate a taste for it. Surplus removed from modern hives can much approach skep honey in aroma if permitted to mature so long (even when capped) which is never of course permitted, since a greater number of consumers appreciate and prefer its delicacy.

As to why all this should be made use of for commercial propaganda in favour of skep manufacturers and to the detriment of modern beekeeping is the mystery itself.

THE EGYPTIAN BEE.

Whilst Egyptian beekeepers, of the orthodox class, and even the comparatively few modern apiarists in the Nile Valley, are doing their utmost to confine this highly prolific bee (which truly puts the Dutch bee in the shade in this respect)—to a very small receptacle—and yet complain of its swarming propensities (!), we have been obliged to winter our pure Egyptian colony, who are sufficiently rich in Autumn bees, on eleven combs. They are in an ordinary telescopic hive, and no exceptional preparation for their wintering has been their fortune. If, in spite of their great percentage of young members, they will be incapable of resisting the winter climate of this Country, ordinary methods of wintering cannot be maintained with confidence, although a single experiment is of no value as a conclusive test.

The **Egyptian Standard Frame** has the following external measurements: top bar 22 cms., side bars 17½ cms., and bottom bar 18½ cms. Such a doll is still maintained for a brood chamber nursery, and serves with other methods of management as an ideal demoralising factor.

Colour: There are different types of beauty; and judgment is a question of taste. In our opinion, the Egyptian bee, to put it fairly, is **not surpassed** in beauty. Golden Italians may be a great attraction; but it is doubtful that they will be considered by most people as more attractive than the former. The peculiar yellow tinge of the Egyptian bee is distinct and constant. Similarly is her greyish white hair. Hybrid Egyptians generally maintain the greyish colour on their faces, but the thorax will often show yellowish brownish hairs as met with in the paternal element. The hybrid Egyptian-Italians exhibit in addition, apart from a slightly larger size than the pure Egyptians, a trace of the characteristic yellowness of pure Italians mingled with the coppery tinge of Egyptians. This is not an easy sign of distinction, since it is dependent on colour sight training. Egyptian-natives and Egyptian-Dutch crosses still maintain their beauty in spite of much black blood. The former, as a sign of distinction from the latter(?), will fail to exhibit other than faint traces of their greyish bands on their abdomens.

Size: The pure Egyptian bee, even to the naked eye, is distinctly small. The size of composite strains is variable, but the tendency is towards a slightly larger size than the pure one.

Voice: The distinctive sharp flight sound of Egyptians is hereditary, even with second crosses, and is an excellent sign for tracing Egyptian blood.

Temperament: Egyptians are most docile in favourable bee weather, and can be handled with immunity as if dealing with the most docile Italians. Under unfavourable conditions they have no patience with an intruder. Whilst so brave under the latter conditions, they are quite nervous under the former; and any method of subjugation if at all necessary will do for them.

Activity: Pure Egyptians in the Benson district have not shown themselves a failure as foragers, but the hybrid Egyptians, and especially the Egyptian-Dutch, are far more active, and they favourably impress us. Whilst reserving judgment on the pure strain under English conditions, we do not think we shall be erring by recommending the introduction of Egyptian blood in crosses.

Failures: The greatest failure of Egyptians is their professional capability of robbing, as much, if not worse, than Italians. This, however, has a good aspect, in the way that they themselves will not tolerate robbers.

As to their failure of excessive swarming—which in our opinion is not so much a racial defect as a bad habit consequent to the traditional faulty management of such a prolific strain—it is too early yet to judge. The 1920 season will no doubt afford sufficient opportunities with nuclei which we are importing.

THE DEVELOPMENT OF THE HONEY EXTRACTOR.

It is of educational value to encourage literary competitions. We offer a prize of three guineas or a nucleus of bees (Italians, Natives or Crosses) established on three natural combs built on metal foundation (British Standard Size) for the best concise article embodying suggestions for improving the popular forms of hand-used honey extractors. The introduction of a new and a better form of extracting machinery of this class is the aim of this competition. Two artistic and clear illustrations may accompany the article. The prize article will be copyright for THE BEE WORLD.

For the benefit of our readers abroad entries close on December 15th. We cannot, however, undertake to ship bees. In case of the prize being won by a home reader as we hope, the nucleus, if preferred, will be despatched not later than mid-June, 1920. Only members of **The Apis Club** are entitled to take part in this competition

Mr. W. P. Meadows, of Syston, (in his capacity as one of the foremost "bee engineers") has kindly accepted to act as judge.

FUNGUS DISEASE.

There is a tendency towards mixing up "dry" **brood** with the so-called **Fungus Disease** of the brood and adult bees met with on the Continent. There is no convincing scientific literature behind the latter; on the other hand, there is every suggestion of a post-mortem growth, especially in damp localities or in damp hives, death of the brood being due to other factors.

"Dry" brood as met with in this Country on a small scale, however curious it may seem to many as a form of decomposition or rather of preservation, is apparently non-infectious and is met with in hot weather following a "chilling" period. It will not be discovered by the non-observant apiarist, especially if the scavenger bees perform their task promptly instead of awaiting the attention of the queen and the nursing bees to the affected cells.

Before a panic course of "cures" is to be employed, our Government researchers ought to be given a chance for investigation

WORDS V. DEEDS.

Whilst much valuing the great moral support that has been generally extended to us by our colleagues in Great Britain and abroad—a maximum of help which we gratefully acknowledge—and whilst again appreciating the added support of a growing army of readers, we sincerely hope that we shall not be misunderstood if we remind all our friends that in inaugurating this magazine we have much counted on the spirited co-operation of everyone of them. No few amongst them are in a highly favourable position for securing displayed advertisements for it, and of still multiplying the membership of **The Apis Club**, however gratifying its present rate of growth may be. Probably, if every one of them realised that the annual cost of each copy of the Magazine, whilst in its present lack of advertising support and of a substantial educational fund, has quickly reached the disquieting figure of nearly thirty-five shillings, our great personal sacrifice with our collaborators would be a sufficient inducement to a greater effort on their part for aiding us in rendering our experiment a lasting success.

We much regret to record that many original promises of material support to the Educational Fund of the Magazine have been forgotten, whilst the insulting suggestion of utilising this organ as a camouflaged "warfare" instrument has been the best constructive suggestion offered to us by some leaders who want to take advantage of our position, and yet profess to have the cause of bee-keeping at heart. We do not repeat our appeal to them, but only to those who can genuinely appreciate our motives and position, and who trustfully endorse our policy of **purely serving a science, a craft, and a literature, without any form of bias.**

None more than ourselves realises the primitive character of the Magazine at its present stage of infancy, campared with its proper sphere of function, but we are greatly hampered by the cost of production, despite the great consideration of our art and printing organisers, and of the gratuitous services of the editor and part of the staff.

We trust this explanation which we reluctantly repeat in more than one connection will save us another future repetition of our excuse for the entire inability, in the absence of adequate capital, to carry out most of the progressive suggestions, which are still pouring into our Office, together with a wealth of complimentary letters..... The latter may serve to encourage us, but certainly will **not** materially help our object. Commonly there are three classes of people: those who find pleasure and pride in construction and co-operation, those who invite themselves to existing buildings, and those who specialise and excel in destruction. May we hope that we shall be associated only with members of the first type, and may we depend on the consideration of our readers in not unnecessarily increasing our difficulties?

Amidst these trials, which at best increase our determination to overcome them, we are cheered and honoured by the associate editorship of the Rev. John Beveridge, M.A., B.D., E.B: S.B.A., of Gartmore, Past President of the **S.B.K.A.**, who will kindly help us with translations of Norwegian literature, and of Mr. A. F. Harwood of Ealing, who has been good enough to promise, in addition to acting as botanical editor, to favour us with reviews and translations from the French, the Italian, and the Spanish Bee Press. To these valuable international contributions no doubt many of our readers will look forward with special interest.

IS IT IMMUNITY?

An able writer contributes the following remarks to a contemporary: "I do not think it quite correct to say that only two or three strains of bees have been tried. One recalls that the late Frank Benton introduced a good many races, and these have been tried by men who knew well enough what qualities it was desirable to propagate. It must never be lost sight of that bees stand alone among domestic stock, in that mating is not easy to control, and if a reputable breeder bred the best possible strain, how long would it be before the colonies he sent out would lose most of their original blood? It appears to me that it is well-nigh hopeless to establish a strain of bees, unless colonies are produced in such numbers as to swamp the native race completely.

I confess to feeling rather dubious as to whether the Italian-Dutch product, which appears to be the aim of the present re-stocking scheme, will prove a final success from the point of view of resistance to the "Isle of Wight" disease. That the Dutch resisted it while they were pure, there is indisputable evidence. That the Black-Dutch cross did not resist is equally certain. That the Italians are liable is well-known and Italian-English crosses also fall a prey. If Italian-Dutch......are resistant, it does not follow that an Italian-Dutch Black will prove equally so. If not, the scheme is as futile as any other

I do not want to be thought pessimistic, but we must face the facts squarely, and the point I want to make is that in breeding for immunity, we are bound to remember that a large percentage of colonies will sooner or later be infused strongly with native blood. This is the difficulty that confronts us when we have produced a resistant strain."

The promising feature of the Government Re-stocking Scheme is the selection of good strains that have been introduced. Nothing has been done haphazardly.

There is sufficient evidence both to prove as well as to disprove the above quoted remarks. That certain strains appear to possess a good share of resistance to infectious bee diseases there seems to be no doubt, but the more one examines the reasons the more one is led to believe that a great share of the proved resistance is the result of the care in selective breeding by a conscientious effort in controlling both the paternal and the maternal elements; and we have little doubt therefore that if the same **high standard of selective breeding** is made here part and parcel of the scheme for re-stocking, without the sinister prejudice against colour, the much-feared disappointment will hardly occur. Some pure Italians, we need hardly say, are far from being worthy of survival. We have had good opportunities for importing queens both from the Continent and from America, and we know after their careful testing what we are talking about. Our views are equally endorsed by other observers. Selective breeding should be based on open-mindedness, or experience, and on mature observations. It matters very little after that whether one is dealing with Natives, Italians, Egyptians, Dutch, Tunisian or other bees. Bees are kept for the production of honey; but not to produce it and then to perish as a community. Therefore disease resistance must never be lost sight of as a desirable quality, and this seems to be much connected with the elimination as far as possible of **in-breeding,** the wrecker of constitutional hardiness. As we pointed out in our first number, the degenerating influence of in-breeding is demonstrable, even in the human race.

We presume the writer of the above notes which we have pleasure in quoting and commenting upon, has not acquainted himself with the latest advance in **mating control,** which we partly described in the July number of our periodical. The method has gained the attention of no few leading apiarists who have honoured us with their visits, among whom may be mentioned our friend Mr. C. P. Jarman, who is fully open-minded, if equally critical.

By this system, which needs both attention and labour, we have not failed to produce pure Egyptians in a large apiary where other drones predominate, and we have had the pleasure of presenting our production to the secretary of the Sheffield Beekeepers' Society, whose interest in research is an excellent example.

But as for the trial of various strains of hive bees, we must say at once that no serious effort in this direction has been attempted except on a very few strains. **Interest is as essential as impartiality and capability in conducting research,** and a combination of the three qualities is very rare. Furthermore, the Trade is forced to study the demands of the market. If the public have no desire but for Golden Italians, that is mainly for colour alone, they will never trouble to educate the public. It little interests them to advertise the excellent qualities of well-bred natives. Their trouble will never be appreciated. No one is after **selected composite strains,** especially if the method of their production is kept secret.

When we recommended **the Egyptian bee,** whether pure or crossed, for trial under English conditions, the apathy was general. Most of those who could have afforded the experiment were much under the influence of text book teaching. The only exception so far as we know was Mr. F. M. Claridge, of Copford. His experience and knowledge have not led him to the belief that such a study is beneath his dignity. He both incurred expense and trouble, but his labour never received even formal recognition, although we are gratified to learn at last that so many of the Egyptian virgins which he has so generously distributed have successfully mated, and their progeny have been the subject of much favourable comment.

The spirit of research, although revived, is still in sad need of a stimulus.

SELECTIVE MATING.

Lacking adequate assistance, and with assistance the absence of which would, in reality, be a gain, our difficulties in evolving a system of mating control were by no means small. The **drone trap** soon proved a big nuisance, and a hopeless instrument for a growing apiary. An out-apiary for the purpose of **mating control**—so-called—was again out of consideration, principally because of the necessity of evolving more than one type of composite strain. It might have succeeded with a Miller-Penna strain or a Simmins-Penna, or for a similar composition, but not for many. The question was one of an endeavour to raise different compositions, and under difficulties of labour and of multiple distracting duties. "Necessity is the mother of invention," and very soon the following system of mating control was evolved. It strongly proved our suspicions regarding the extent of **in-breeding** in Nature, however much the popular belief is against this. The factor of odour may be a safeguard, but what about the swiftness and might of the drone? It is illogical again to imagine that Nature will sacrifice the propagation of the race for the mere sake of avoiding in-breeding. **Nature is both constructive and destructive** The unfit as well as the fit are produced and the former is destroyed. The process of construction and destruction go hand in hand and at a big sacrifice. But here man—a product and instrument of Nature—principally for his gain should he wish it, may play a constructive part.

To produce a certain cross of bees, select your paternal colony as much as your maternal one. The latter will supply you with your queen cell which you may pin to a comb with brood (principally capped) and with adhering bees. There is no need for a strong nucleus, both for the purpose of saving "material," and for facilities in removing any original drones present. Furthermore, in case you have a virgin, she will be easily introduced to a weak nucleus. This brood comb, in company with one richly provided with food, take their place in the mating hive, which must be well equipped with good packing.

Now for the paternal colony. A shallow frame is probably the most economical to use for stimulating drone-rearing. Place one or two in the centre of the brood nest. The bees will generally build drone cells from the bottom bar; and these will duly receive the attention of the queen. When the brood is capped and ready to emerge, or preferably when it is rapidly emerging, it is fit to take part simultaneously with the frame of brood and bees and with the comb of food in the formation of the mating nucleus. Always have the development of the drones a stage in advance of that of the queen The reason is obvious. It is safe therefore in order to avoid disappointment never to introduce a virgin queen too early, that is before the emerging drones are fit for flight. There are other ordinary points of management which are sufficiently clear and understood One other point, however, must be emphasised A weak nucleus, with or without a virgin, will attract drones from other hives. They are welcome, and they will stay. Therefore once undesirable drones have been eliminated and undesirable capped drone brood destroyed by means of a long needle or the like at the commencement, the introduction of their confederates should be stopped. Perforated zinc, or paper lightly stuffed in the hive entrance for three or four days will serve **to prevent**: (1) the unwelcome attention of strange drones, until those in the hive have reached a greater stage of maturity; (2) the dwindling of the nucleus through the return of old bees to their original hive, as would otherwise occur in an appreciable number, however many defects may be associated with this form of confinement; (3) the conservation of heat, in order to facilitate the hatching of the capped brood both queen, worker, and drone.

Closing the **mating hive entrance** with lightly stuffed paper is much superior to the employment of grass. The bees will make their way out and the apiarist need not trouble any more about them (provided he has supplied sufficient food from the beginning) until he examines again for signs of fertility. The same comb with drone brood may or may not serve again for another mating hive, before its final return to the original paternal colony to take the place of another drone comb to be employed in the same manner.

A shallow comb, with naturally-built drone cells from its bottom bar, is far preferable to the use of a complete drone comb, because of more than one reason: (1) there is no necessity here for "flooding" an apiary with drones; it is merely a case of flooding a hive with them, and thus securing for our young princess an excess of desirable associates, who will be on the look out, before outsiders, for the mating trip, in this way the chances of accidental mating being reduced to a very small minimum; (2) the proportion of drones supplied to the strength of the nucleus raised being adequate, there is no need to employ the "paternal queen" unnecessarily on drone laying; (3) it is most economical, considering that, should the shallow comb be needed for a super, nothing more than a stroke of the knife is required to render the comb fit for it; (4) it supplies the nucleus with a proportion of capped worker brood in addition to the drone brood.

Once the queen has mated and commenced laying, one of the various methods of re-inforcing the nucleus is the next course while she is under testing.

True mating for a "hybrid" strain in a more or less isolated apiary, where no more than two strains are employed, is comparatively an easy matter by the old method of employing a certain number of colonies for the sole purpose of rearing drones. It is unworkable, however, in a large apiary where various strains exist.

Our successes by this method of controlled mating have reached about 80 per cent. We attribute our failures largely to negligence on our part through over-occupation. The system needs a **mating controller,** much as this will amuse the "modern conservative," who knows that the question of queen-rearing and queen-mating has been settled long ago by Doolittle....It is difficult to say, in view of the labour and attention involved, on what scale can this system be adopted commercially. It is of scientific interest and **its greatest achievement is that it practically excludes all chances of in-breeding, and thus helps to create regenerate instead of degenerate bees.**

When drones from the same hive can mate with the queen to such a high percentage, despite possessing the same odour as the queen, is there any ground except unjustified hesitation in judgment for doubting the evil influence of in-breeding in apiaries other than those professionally conducted by our reputable apiarists, who sufficiently appreciate the importance of the paternal element? There is now certainly no justification for suspecting obscurities.

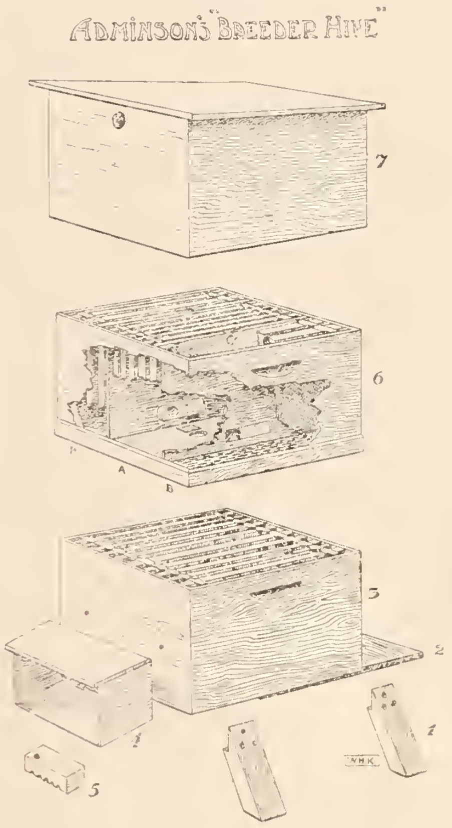
A SYSTEM OF INTENSIVE BREEDING.

The basis of this system of intensive breeding is a recognition of the fact that, once the brood is capped, it needs no further attention from the bees other than **incubation,** although we admit that an insignificant amount of help to the hatching or rather emerging brood is sometimes given by the nurses; and we shall not consider the incidence of some old workers laboriously engaged in imprisoning a worker endeavouring to emerge (as revealed by the observatory hive) other than an amusing and a surprising exception. In the presence of a correct degree of warmth and humidity, no such help however is needed, as the emerging bees will be sufficiently strong to help themselves.

It logically follows that the bees should be relieved of the incubation of as much capped brood as possible, and their attention directed to something more useful. Here the **brood hatching chamber** plays its part. Different designs of this chamber can be introduced. We illustrate a design other than that depicted in our July number

The brood-hatching chamber as here illustrated consists of three compartments: a central **incubating compartment** and two **surplus compartments,** one on either side. All parts of this chamber are detachable and may be made as a modified stock box of an ordinary W.B.C. hive, so that when the detachable parts are removed, and this can be easily done, the stock box is re-covered. On the other hand, it may be made to fit a single-walled hive, as depicted in the accompanying illustration. The base of the whole chamber is in one piece, and when employed separately will serve as a **winter board,** apart from its **super clearing** utility during the honey season when its side sections are covered with perforated zinc.

Its central compartment has a perforated zinc base with a hole (provided with a swinging shutter) for intercommunication with the brood-chamber proper, when desired; otherwise the hole is kept covered, and the compartment utilised for incubating capped brood frames, to a maximum of five frames (the actual number depending on the strength of the colony, the prolificness of the queen, and the progress of the season, etc.) A few nursing bees are left with these to attend to the small proportion of larvae present (none other than frames with slabs of capped brood are entitled to be "lifted"), the rest of the bees being shaken off the combs before placing the latter in this incubating compartment. Frames fitted with full sheets of worker foundation, or preferably drawn-out combs, should take their place in the brood chamber proper, so that they may receive the attention of the queen and bees, whilst the capped brood is being incubated, through the ascending warmth and moisture of the colony. When the incubated and fully developed brood hatch, the emerging bees will not lose touch with those in the brood chamber proper, will find sufficient food at their disposal, and will ultimately pass through the bee escapes fitted in the movable side walls of this compartment to the surplus compartments, and finally to the brood chamber itself. But even should many of them remain on the combs, these would not suffer by their confinement, and could be finally transferred to the brood chamber, and other combs of capped brood "lifted" to take their place, after similar preliminary treatment. The circle is thus completed and repeated. It is clear that such an intensive system of breeding, however simple in management, requires no little commonsense in observing that it is entirely dependent on the **conservation of heat** by adequate packing, on keeping a watchful eye on the extent of the food stores, which may need at a critical stage to be artificially supplemented, and on a correct appreciation of the progress of the season. It is not a "trapping" system, yet it is not intended for a mere keeper of bees.



1 Detachable legs.
2 Removable floorboard
3 Brood chamber.
4 Detachable porch
5 Entrance shade.
6 Brood hatching chamber (A, central incubating compartment. B B′ side compartments)
7 Deep cover, to take section crate.

Fig. 16.

The same compartment is provided with a **full cover of perforated** zinc; this being preferred, specially at the base, to wire cloth, although less resistant than the latter, on account of the greater ease in cleaning it from propolis.

In association with incubation, this compartment is most valuable for **direct queen introduction** on emerging brood, and for the **preliminary formation of a nucleus.** It is equally serviceable for **uniting**. When allowed to intercommunicate with the brood chamber, a second compartment at the disposal of the queen will be provided. It is also intercommunicable (by means of holes in the side walls, provided with shutters) with the surplus sections, and the whole chamber may be rendered at once a **super**. Not only detachability, but **intercommunicability** are marked features, and the imaginative and enterprising apiarist can make use of this chamber for endless purposes, amongst which **natural queen-rearing under the impulse of independence** may be mentioned. It is an advantage of this useful appliance that it can perform at one and the same time more than one function.

The principal function of the side sections of the B.H.C. is to secure early in the season a sufficient number of standard combs of capped honey for use with or without artificial stores for winter feeding. No doubt it does not pay the commercial apiarist to feed his bees entirely on honey during the winter, but does it pay him to entirely rob them of their natural stores and then indulge in abusing the Government for candy feeding? When it is impossible to feed bees in winter on **early** and mature honey stores, they ought, at least, to have a share of it, otherwise they will be robbed of the **vitamines** in fresh food necessary for living organisms, and of their natural **fat** and **protein** diet, honey not being entirely a sugar solution; and however small the latter elements may be as constituents of it, their significance to the bees is beyond our appreciation. They may or may not winter well in their entire absence, but the "nots" appear to be frequent in cases where no other forms of compensation can be discovered. As a form of compensation we are practising feeding bees in autumn and winter on **olive oil or lard candy.** The heat-generating fatty constituent (about ¼ lb. to 6 lb. of sugar) insures, in addition, a desirable degree of softness to this winter candy. When well made, a degree of softness almost comparable to that of **honey candy** used for travelling queens is obtained and the incorporation of a little oil in the latter seems to merit a trial. Those who only value foreign literature—a human habit after all—may be better impressed regarding the value of early honey for winter use by the extracts which we give elsewhere from **The Canadian Horticulturist & Beekeeper.**

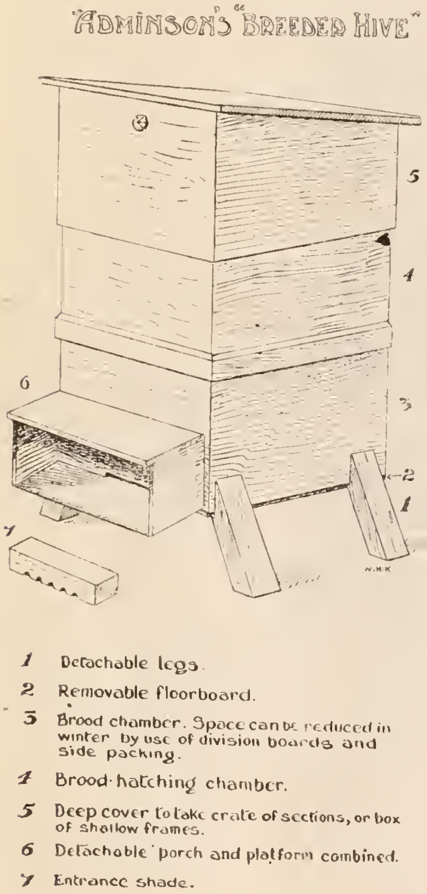

ADMINSON'S "BREEDER HIVE"
3
5
4
6
3
2
1
7
W.H.K.
1 Detachable legs.
2 Removable floorboard.
3 Brood chamber. Space can be reduced in winter by use of division boards and side packing.
4 Brood-hatching chamber.
5 Deep cover to take crate of sections, or box of shallow frames.
6 Detachable porch and platform combined.
7 Entrance shade.

Fig. 17.

This intensive system of breeding, which is not incompatible with the "**skyscraping" method** of honey production, has been good enough for adoption by one of the largest breeding apiaries in Great Britain, and we therefore presume that it is sufficiently good for smaller breeding and restocking apiaries. But we can safely count that those who are prejudiced to everything new will consider it far from being a good method of rapid increase, despite its obvious merits in that respect. The simple **breeding hive** which we originally suggested and was adopted with slight alterations by Messrs. Adminson Ltd., is depicted in the accompanying self-explanatory illustrations. A few comments may be helpfully made. It will be noticed that **all** parts of this hive are **detachable,** and that the brood chamber is capable, therefore, when supplied with a suitable travelling cover, of moving with the bees. It may serve therefore as a **travelling box**. Unless good workmanship can be secured, it is far better to have the **floor board** a fixture from the beginning, otherwise it will prove a source of nuisance especially during the robbing season. The **porch and platform,** which are in one piece, are not of the rudimentary useless type, and yet are quite economical, and will serve to keep the entrance of the hive fairly dry in wet weather thus saving the lives of bees that treacherously slide and fall on their backs, generally never to rise again

Detachable insulating walls are preferable to division boards and side packings. We have not the slightest commercial interest in this particular hive, and if we strongly recommend it for breeding purposes, we do this purely on grounds of merit including economy. An "Insulator" or a "Hygienic" hive may be ideal for an amateur beekeeper to whom expense is no consideration, a cheap sugar box hive may be a good thing as a bait for introducing modern methods of management amongst skeppists, but for the modern apiarist who ought to set a progressive example to others and who ought to act as he professes, something better than the latter type of hive is desirable, and we believe that this hive which has been also patronised as well as manufactured by Messrs. James Lee and Son of Uxbridge, will supply the need for a simple, economical and yet a highly modern hive which has a fitting place in all breeding apiaries.

The system of intensive breeding which it introduces may be continued in careful hands and after requeening if necessary, till late in September, artificial food being employed as a breeding stimulus, and frames of capped stores reserved to the end of the season to replace undersirable combs or the last batch of brood combs that need incubation before the final removal of the B.H.C. for the last wintering preparation. A valuable force of **autumn bees** is thus secured, but at what cost in feeding, the practical beekeeper alone will know, and will equally understand on what solid grounds we have been criticising the 10 lbs. per colony sugar allowance, much as this has been supplied with praiseworthy promptness with but few exceptions on the part of the officials, directly the need for artificial feeding was declared. It has to be criticised again and again if we really mean to believe in the practical application of scientific research and not in merely admiring scientific reports on our book shelf. The conservative beekeeper, who is sharpening his pen for the next attack on some person or the other for the next losses of his bees, peeps under the quilt, and sees so many eyes gazing at him; and little does he know that such a strong colony may be virtually poor if composed of as many as 60 to 70 per cent. of comparatively old bees—a case which is by no means rare—that are not destined to survive the trials of winter. He will therefore treat our considered advice with his familiar smile—until disappointed.....

MUNICIPAL FRUIT CULTURE.

Whilst excusing ourselves for avoiding the monotonous repetition of a bee-keeping diary, which will not escape the attention of any novice who takes sufficient interest in studying his practical manual, we make no apology on the other hand for referring to the insufficient attention given to fruit culture, although it is quite obvious that, in the highest interest of bee-keepers and of national food production generally, the development of fruit growing should receive a far greater attention than has been customarily accorded to it.

It is to be admitted that both soil and climate influence the quality of fruit; yet fruit growing in any part of the Country is never to be regretted. It is advantageous to **early** plant fruit trees,—in November for instance, though not following dry weather. And it is up to every bee-keeper, who can possibly plant more fruit trees on his own land, to do so as early as possible, and to set an example for popularising fruit growing in his district.

An important side of the matter is the question of municipal interest. As an illustration, we may mention that the amount of yearly expenditure on municipal trees, including attendance given, in just one of the London boroughs, exceeds two thousand pounds; and yet tradition prevents the planting of fruit trees in the roads as well as in the parks in place of many useless ones which are not kept for botanical study. We are led to believe that English children are not so "good" as Canadian children, and that they cannot be induced to behave orderly! Or is it merely a case of planting useless trees at all costs, rather than let poor children benefit? What is there more ornamental than a blossoming fruit tree which affords in addition a source of food for man and bees, and yet serves the municipal object of a "road tree" as much as any other ·

Original Contributions.

Notes on the Standard Frame.

By J. HERROD-HEMPSALL,
Associate Editor, The British Bee Journal.

During the past months the question of standardisation respecting both hives and frames has been much to the front. The discussion generally as to hives has been on what shall be a standard size for the outer cases and lifts, and the number of frames brood chambers should accommodate, their width being already determined by the length of the frame standardised a good many years ago.

J. Herrod-Hempsall, Esq.,
Associate Editor, The British Bee Journal.

Most of the discussion now is on whether the British standard frame is really the best size. When the size was fixed there was naturally considerable discussion and variation of opinion, and the present standard was fixed after taking various factors into consideration. At the present time the trend of opinion is towards a larger frame; the reason for this being the prolificacy of the Italian queens that have been so largely imported into the Country the last few years. There is no doubt the Italians do, generally speaking, raise more brood than the natives. Whether the amount of surplus gathered is in proportion to the number of bees reared is a question on which all are not agreed. There are larger frames than the standard on the market, and the users of them are of opinion that a larger size should be adopted as the British standard. Whether their arguments are weighty enough to persuade the British Beekeepers' Association to do this is another matter. If a change was made it would not suit everyone by a long way, no matter in what direction it was made.

Conditions are now very different to what they were when the standard was fixed, and the expense, dislocation, and inconvenience of altering would be much greater now for at least two reasons. Firstly, there are many more beekeepers who use bar frame hives now than there were 37 years ago when the British standard was adopted. Secondly, at that time no one size of frame was in such general use in this Country as the " standard " is to-day, and therefore the dislocation and inconvenience were not so great. The hive and frame in most general use at that time were the "Woodbury," but even these were not standardised, as the following quotation from the editorial remarks in the **B.B.J.** of April 1st, 1882, on the meeting at which the size of the British standard was determined shows.

" It was suggested that as there were so many Woodbury hives in existence, it would be a good plan to retain that size for the stock frame......Then if the Woodbury frame was adopted, whose so-called Woodbury was it to be? There are dozens of them (so-called) on the market, not two of which are of equal size internally or externally."

The same diversity of opinion exists in other Countries, as will be seen from the following table of sizes of frames in general use.

	in.		in.		in.		in.
British Standard	14	×	8½				
Simmins Commercial ..	16	×	10				
Quinby	19⅛	×	11	and	18½	×	11
Jumbo	17⅝	×	11¼				
Langstroth	17⅝	×	9⅛				
Adair	13⅜	×	11¼				
American	12	×	12				
Gullup	11¼	×	11¼				
Heddon	18⅙	×	5⅜				
Danzenbaker	17	×	7½				
Indian	11¼	×	8½				
Do.	14	×	8½				

In those countries producing honey on a large scale, the Langstroth appears to find most favour. This it will be seen is about the same area as the Simmins Commercial frame, both of which are used to some extent in this Country.

So far as I can see there is not at present the least likelihood of the **B.B.K.A.** altering the size of their standard. Personally, I think the disadvantages of altering the standard outweigh the advantages, but if any alteration was made, the present length should be retained, and the frame made deeper.

There is no legal obligation on any one to use the standard frame. Larger frames can be procured to order, and at least one manufacturer stocks the Simmins 16 × 10 frame and foundation to fit it.

I am afraid these notes are somewhat fragmentary, but they have been written at odd moments, and during railway journeys, so must crave the indulgence of readers of THE BEE WORLD.

[Our friend J.H.H. with the Rev. Digges are probably the only two bee journalists in this Country to whom, so far, the pulse of one leading Section of the Bee Community or the other is most perceptible. As Acting Editor of the leading weekly bee journal, which possesses an extensive circulation, Mr. Herrod is naturally in a position to reflect the opinion of a great mass of British beekeepers. Hence his notes on the Standard Frame must be carefully scrutinised by our readers.

Whilst Mr. Herrod admits that " conditions now are very different to what they were when the Standard was fixed," and that "at the present time the trend of opinion is towards a larger frame," he concludes by saying that " so far as he can see there is not at present the least liklihood of the **B.B.K.A.** altering the size of their Standard." But why? If " at the present time the trend of opinion is towards a larger frame," it is the duty of the **B.B.K.A.** to examine again the whole question in the light of present day experience and not according to the views of British apiarists of nearly forty years ago.

We believe J.H.H. was the first to suggest in the **B.B.J.** that if any present alteration in the British Standard Frame is to be introduced, it should be in depth and sufficient for the additional employment of an eke in conjunction with the brood chamber. The **Herrod Frame** will not inconvenience in any way those who employ the W.B.C. and similar popular hives. We must not forget also that many additional members to the Craft are gained monthly now that the Food Production Department of the Board of Agriculture and Fisheries has given its moral and material assistance to the regeneration of British Beekeeping. It is highly in the interests of these new members and of the Craft that they should not be forced to bow to old traditions if they logically find that these do not suit their requirements.

In short, if the habits of the honey bee and especially of a prolific strain which is now being popularised in this Country, are such as to demand a **deeper** frame, the sooner this is decided upon and introduced the better it will serve the interests of beekeepers. We are not sure that the creation of more than one type of standard frame is not advantageous to the Profession. No inconvenience will then result from this course. Manufacturers will not refrain from making any frame for which there is a demand and for the production of which they possess suitable machinery. With the introduction of **metal foundation,** there is no difficulty in making foundation sheets of any size. —Ed. B.W.]

Feeding.

By C. P. JARMAN,

Editor, Bee Craft.

From the varied experiences one meets with it would appear that insufficient observation has been made as to **the conditions under which bees act differently in taking and storing food** supplied to them.

There is frequently a marked difference in the behaviour of strong and weak stocks which one can find reason for, while other differences in behaviour appear to be difficult of explanation.

In late summer or autumn, after the honey flow, strong stocks will usually take down all the stores you supply them with, and unless the feeding is delayed until too late in the season will seal the greater proportion, so that the unsealed are consumed before any evil effects can result from their having fermented. Weak stocks or nuclei, on the other hand, will not always take down all that you supply them with, and as a rule a nucleus will not take down more than it can seal or keep in good condition. A change from syrup to candy feeding, however, should be made earlier with a nucleus than with a full stock, because it has not the same heat producing capacity and consequently is less capable of sealing a large quantity of stores.

A nucleus can store and seal sufficient **candy** from Aug. 1st to last through the worst of the winter and come through well on it. Better results would probably be obtained if syrup was given for the first four weeks.

A late small cast of black bees on July 27, 1917, hived on 5 full sheets of foundation, had nothing but pink candy from that date right up to the honey flow in 1918. During 1918 this stock was increased to four after a swarm and a cast absconding. Twenty pounds of surplus honey was taken from the strongest of these and three of the four stocks were successfully wintered during the severe season 1918-19. The one lost, as is not infrequently the case, was the strongest.

The weak cast of 1917 which had no food but pink candy to winter on, either in shape of stores taken down or in cake on top of frames, came through the winter 1917-18 without a sign of dysentry and consumed from date of hiving up to the honey flow, 40 lbs. of candy. During the winter 1918-19, two of the stocks which survived showed signs of dysentry, but the stock which died in March and one of the survivors showed no signs. The honey flow and open weather, giving opportunities for cleansing flights, with the assistance of a little Izal and Yadil took all so-called I.W.D. symptoms away in two or three weeks.

There has been a great deal of talk and some few letters to the press **with reference to the deleterious effects of the Government pink candy as food for bees.** Although such food, however perfectly made, must be incomplete, and therefore not as good as natural stores, it is a **wholesome** diet, provided other conditions are satisfactory.

Natural stores (honey) must be the best food for bees; failing this, syrup stored in combs. Candy **on top of combs comes third** on the list.

In some parts of North America the late honey crop makes injurious winter feeding, so this is all extracted and sugar given. There is a **late dark honey** (not honey dew) which bees sometimes gather, which is unpleasant to taste and is probably bad for bees; it may be privet, but unwholesome honey is not often heard of with us.

The numerous complaints of unsatisfactory results from feeding with pink candy must have been made upon some foundation, but it is probable that the results were in consequence of unobserved conditions, of which the candy was one factor but not the sole one. The amount of antiseptic usually added to candy is so small, that injurious effects from it are not likely, and the benefits are open to doubt. With an antiseptic which has any toxic qualities, the anxiety to dilute it to non-toxic strength may result in its being reduced to non-antiseptic strength.

This Spring a weak stock (which was a late nucleus of the previous year wintered on five frames) was fed with syrup in a round tin rapid feeder, in excess of its requirements. That is, each evening, the bees were given more syrup than they look down in twenty-four hours. The feeder eventually became quite full and remained so for a week. A nectar flow had begun and the syrup made of pink candy was neglected. The combs were not clogged, no combs have been taken out of the brood box, which was increased to 10 frames during the feeding, no pink syrup has been taken up into the supers, and there is the usual area for brood rearing.

This experience will not be similar to that of other beekeepers, yet if more observations had been carefully made we should expect to find a set of conditions which would enable us, with confidence, to feed one hive in the Spring freely, and another one sparingly. Instead of which slow feeding is almost universally considered as essential for stimulating.

It would appear that in the Spring and during the main honey flow, bees prefer nectar to the extent of ignoring food supplied in feeder; but immediately the swarming season is over any sort of food will be taken down to the full capacity of the hive, if the stock is strong, but not regularly so with weak stocks.'

It is customary to say of bees that they " do nothing invariably;" the truth of this does not lie necessarily with the bees, but, to a great extent, with our ignorance, which misleads us in our anticipations.

[The fitting conclusion of this illuminating article is not empty philosophy. It is a candid admission of our greater need of experimental study. Mr. Jarman is one of the few bee masters whose ambition of research is never satisfied. He is sufficiently broad-minded to realise that our present state of knowledge is far behind the rapid advance of Time, and therefore he continuously inspires liberal and non-orthodox principles in his articles to the Bee Press and especially in his virile magazine, **Bee Craft,** the standard of its editing is a contrast to its small compass.

There is not much curiosity in bees refusing artificial food during the honey season. They are slaves to the **nectar aroma.** At least careful watching of their habits leads one to this view. Under the title " Foraging and Nectar Aroma " the Editor of THE BEE WORLD commented as follows in **The British Bee Journal** for May 29th, 1919: " Mr. Kettle intelligently suggests that the reason why bees prefer at first gooseberry bloom to pear blossom is apparently because the latter does not carry sufficiently sweet nectar at its early stage. This is a good explanation: nevertheless I doubt its correctness; and this for the simple reason that in spite of utilising various strengths of sugar solution and placing them in receptacles even on the hive platforms, these were almost ignored by the bees during the honey flow. The element of sweetness existed in the syrup but not the aroma. It was rather difficult to artificially perfume it to the liking of the bees. As for the degree of sweetness bees are known at certain times not to disregard even very dilute syrup; further, nectar as a means of an attraction to insects to perform their fertilising agency, must naturally possess an appreciable degree of sweetness or else its secretion would be valueless, although it might be somewhat poor in quality at the very commencement, but if it is good enough for multiple insects it should be equally good for the honey bees, were it not that the latter possibly possess a keener sense of smell and are more attracted by a different nectar which is more richly perfumed. The nectar of the pear blossoms, in spite of visibility to the naked eye and in spite of comparative abundance, was, comparatively speaking, not much sought after by the bees, even at a later stage of blooming; yet the small and partially-hidden gooseberry flowers were loaded with them. I am under the impression, therefore, that possibly the factor of the nectar aroma is of significant importance—no doubt more than colour—in influencing the fancy of bees when foraging."

In the working of a large apiary, whilst hampered with many other duties apart from relapses of ill health, we often had the most unfavourable conditions to contend with, and at times very favourable facilities. Between these we had exceptional opportunities for wide-range observations, both intentional and accidental, and of conducting experiments for solving some of our difficulties. Placing a piece of soft **candy** over the frames in the midst of the honey season as a safeguard against starvation in unfavourable weather (shortage of labour preventing the regular making and distribution of syrup) surprisingly revealed in many cases that the bees completely disregarded it, so long as natural supplies were available. In a few cases they partly helped themselves in a gradual manner to the artificial diet. In a still fewer number of cases the candy was responsible for saving lives. Where the candy was not sufficiently soft the bees often treated it as an objectionable article and threw it out of the hive, in some cases on the flight board an ideal inducement to " robbing " under unfavourable foraging conditions. They will similarly treat dry sugar. This will explain why a strong stock of bees may die of starvation when fed on badly made candy, and will refuse to touch it in spite of their need of food. The experience of the Editor of **The Beekeepers' Gazette and Irish Bee Journal** endorses this observation. Our last bitter experience is a case of strong pure Italian stock dying of starvation in September with a cake of hard candy resting on their winter board. This occurred at a time of cold weather, during which very few bees dared to show their noses out of the hive entrance, and even had the weather been fav[illegible] it is doubtful that they would have directed their attention to water carrying for dissolving the candy in place of robbing, in which Italians are trained experts, only rivalled by their Egyptian cousins. This is of course a case of negligence, but its moral is obvious. We may add that the stock showed no trace of robbing on their empty combs, which were partly loaded with buried bees in the cells in the familiar manner of starvation, and no signs of disease.

Another interesting experience is the case of two colonies in a distant apiary which were given second storeys with standard combs containing both capped and uncapped syrup reserved from the previous season. Thet were left to look after themselves for many weeks. When inspected during the first week in September we were much surprised to find that a good proportion of the **stored syrup** was left untouched in spite of the presence of some empty combs in the brood chamber proper. We expected of course to find honey stores, if any, the bees using the artificial food to begin with, and we think our experience clearly suggests **the great preference bees have for their natural diet.** It may be argued that the bees will leave untouched their sealed stores for winter use, but this is hardly correct during the breeding season when they cap and uncap food many a time, and the remark can hardly apply to **non-fermenting** concentrated syrup which was given to bees so far back as May.

We think the favourable evidence of Mr. Jarman that bees can prosper on well-made sugar candy is good enough for us, but we doubt that any apiarist can guarantee that this will always happen, other factors for successful wintering not being ignored. Honey stores supplemented by artificial diet represent altogether a different case which is much more favourable in prospects. We are equally impressed by the evidence of Mr. J. Herrod-Hempsall regarding the extent of medication of his bee diet, but as he uses a volatile, although a comparatively toxic germicide, we can well understand that no harmful effects result from its use. On the other hand, we have the evidence of Mr. Bee Mason and many other apiarists, both great and small, that their bees have seriously suffered through feeding on the Government Pink Candy. We are inclined therefore to classify the ill effects as due to one or more of the following causes: (1) badly made candy, a defect which can be remedied by permitting the Trade to manufacture it instead of giving the monopoly to any special firm, as the healthy competition in making good candy will safeguard the interests of the bees and beekeepers; (2) adulterated sugar, a point which can only be cleared by chemical analysis; (3) the excessive supply of candy which in turn creates an unnecessary quantity of unsealed and improperly medicated syrup which is likely to ferment and cause dysentry; in this connection we would refer our readers again to our article on "Candy Feeding" in the June number of THE BEE WORLD. In the July issue of **The Beekeepers' Gazette** an editorial on "Candy as Food for Bees" will no doubt interest many readers.—Ed., B.W.

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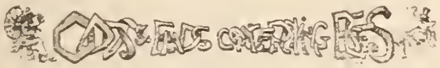

By R. WHYTE.

BEES OF NORTH AFRICA.

The Bees of North Africa have a peculiar fascination for me, and present many problems that appeal to one's imagination. In a book written by M. Hanoteaux, on **"The Kabyles and their Customs,"** in the course of which he has many interesting references to their bees and beekeeping. This race of White Africans, Kabyles, one of the Berber peoples, cultivate two distinct races of bees, the **Punic** or black bee and a smaller bee which they term the **"Wasp Bee,"** so called from its colour, and possibly from its waspish proclivities, which necessitate very careful handling and approaching of their hives. This bee is probably **Apis Adansonii**, one of the most beautiful of all our honey-bees. There is a marked difference in the honey produced by the two species of bees: the blacks producing the better honey. The bees are kept in long clay cylinders or pipes, four to five feet long, and eight to ten inches in diameter. These can be tied in bundles and transported on camels from place to place. Quite a lot of good honey is taken from a species of Alfalfa clover (Hedysarum Flexnosum). The store combs are cut out from time to time, but the brood combs are never disturbed. In an old issue of **"L'Apiculture Novelle"** appears an article by Prof. Lefebvre; this paper was read before the French Association for the advancement of science on "The Bee in Libya." Libya, be it noted, comprises Tripoli, Tunisia, Morocco, and Algeria, as well as the Sahara Hinterland. The land of the date-palm, a most prolific honey-yielder; rosemary and wild thyme also yield well in that famous land.

Prof. Lefebvre treats the matter of beekeeping in North Africa historically from the time of Herodotus to the present day, glimpsing to us how apiaries were and are kept on the Nile itself to the present day, floating up and down as the seasons and the flora varied. As to whether the cradle-land of our race was Libya, as some authorities hold, and whether the human race is Punic or Caucasian in origin is outside the function of THE BEE WORLD to discuss. I think it probable, however, that our black bees came from North Africa originally.

It is very puzzling to me how there is an indigenous race of Yellow Bees in Egypt, **Apis Fasciata**, mentioned by Root in the **A.B.C. of Bee Culture** as "probably the first species reduced by mankind to domestic purposes" and as "probably the mother-species of the Cyprian, Holy Land, and Grecian Bees," and on the western side of North Africa, Senegal, there is another yellow race. These two golden races are separated by 3000 miles inhabited by black bees. Here is a riddle worth studying by entomologists.

REQUEENING BY THE BEES.

How often it is impressed on us to requeen every year if we mean to have a bumper honey crop. C. P. Dadant, in the **American Bee Journal**, says "I have seen so many good queens prove good the third year that I prefer not to replace a first class two-year old queen by one whose ability is unknown to me. The bees usually requeen in good time, if the matter is left to them."

Dr. Miller comments on this thus:—"Same here. Those who think it pays to requeen every year might gain by getting a new strain of bees. Yet there are always some queens which do not come up to the mark and they should be promptly replaced." As pertinent to this question let me quote from another American writer in **Gleanings,** Harry Lathrop, who says:—"Another question I should like to touch on; Mr. Alexander and some others advocate purchasing or rearing queens for wholesale requeening. In our Apiary we practise clipping the queens each spring. When clipping time comes we find that only about ten per cent. of the queens have clipped wings. Does not this indicate that the queens were superseded the previous Autumn?. It is claimed that the best queens are produced by superseding; then why buy queens in order to avoid having queens over two years old?. Strange that some things stand out as being of such great importance to some practical men, which things do not seem to be any part of the problem of successful honey production to others. I like to have young vigorous queens of good breeding and do purchase some fine queens from the breeders of best reputation, but when it comes to a good honey year, the blacks and hybrids of the yard, especially those persistent blacks, are right there with the goods, producing as much honey as the best bred stock." To all of this I can heartily agree, often I have found that a queen had been superseded and never noticed any break in the activity of the colony while this was taking place.

[What about the influence of clipping in supersedence?—Ed. B.W.]

BLACK BEES—DUTCH.

Regarding those "persistent blacks" referred to by Mr. Lathrop, I would like to say that I have had this season about one hundred and ten lbs. honey (extracted) from one of my Dutch stocks, besides taking two combs of bees and brood to make a nucleus. Another gave me two heavy supers and a swarm. The stocks I kept for honey have done very well despite the fact that my place cannot be described as a bee paradise by any means.

[We find our Dutch bees exceptionally active and excellent foragers. When a beekeeper on the other hand does not understand their habits sufficiently to respond by judicious manipulations, he may well be disappointed by their instinctive desire to propogate their race; otherwise we have known them to produce a respectable surplus in comparison with some popular strains treated equally.—Ed., B.W.]

ITALIAN BEES—A NOTE OF WARNING.

In looking up some notes on the Italian Bee I came across a reference to a discussion at the Conversazione of the **B.B.K.A.** in 1906. This discussion followed the reading of a Paper by Mr. Sladen, the famous British queen breeder, on "The Italian Bee and breeding Bees by selection for the improvement of the Honey-producing Character in Great Britain." In view of the present Government re-stocking scheme by means of Italian queens, the strong condemnation of these queens by nearly every member who spoke makes curious reading to-day. The Chairman, Mr. Thos. W. Cowan, and who could speak with greater authority, said "He had an experience, extending to about 30 years on this subject, probably more than that of any other beekeeper at the time. He had imported a large number of foreign bees for his own apiary, and for experiment ...... His experience was that only one out of every ten imported direct from Italy was good for anything. Then with regard to bringing in disease, he could say with confidence, that foul brood was introduced into his apiary by Italian bees. He had never had it before then, but was notwithstanding very successful in eradicating it as the result, perhaps,of a great many years'experience in the treatment of foul brood. He could not understand anyone saying that Italians were not so subject to this disease as English. All the evidence attainable shewed that the disease was very prevalent in Italy, although not so virulent in form as its English protype. Beekeepers there, were wholly unable to keep it in check, and he did not think there were many apiaries in the Country but what were affected more or less with foul brood." Mr. Carr, " By way of emphasising the Chairman's remarks, said that upwards of twenty-five years ago he was the owner of a fairly large apiary in Cheshire, and was classed among the successful honey producers, but in an evil moment, he introduced half-a-dozen Italian queens to his natives, and would never forget it as long as he lived; they had not been there long before his apiary was loaded up with foul brood of a virulent type. So bad was it that he lost 19 strong stocks in one year. He had never looked at Italians with favour since that date." These opinions are only samples of the adverse opinions expressed regarding the Italian bee. The entire report makes very interesting reading to-day in the light of these bees being introduced to this Country to **fight disease**. The foul brood situation is a very serious and present danger, although it has been overshadowed these last few years by I.O.W. In any case where is the proof that these bees are strong in stamina to stand up against I.O.W.? Personally, I have turned the pure Italian bee down.

T. W. COWAN, Esq.
Chairman, British Beekeepers' Association

[There is a good deal of evidence that **Italian bees** have an apparent immunity to **Nosema Infection** ; and on that evidence, the Secretary of the **B.B.K.A.**, in his capacity as expert to the Food Production Department of the Board of Agriculture, has decidely acted wisely by recommending the Italian bee as one of the instruments for fighting this plague.

On the other hand, the more we consider most of the virtues of Italians, the more we are inclined to believe that they are mainly due to selective and scientific breeding, inasmuch as Italians have gained early championship by learned breeders. It is after all human to admire a piece of art work, and the pure Italian bee is a beautiful and a lovable creature.

We have known degenerate Italian bees as more than exceptions. And as for **Native Bees,** their neglect is a sufficient explanation of their degeneration. And although despised by the novice, the true beekeeper will heartily welcome the attention in breeding which these excellent workers of section honey truly merit.

The championship of the **Dutch Bee** in this Country by J. C. Bee Mason and Richard Whyte has not been sufficiently appreciated in the past by the mass of bee keepers who have been under the fallacious impression from time to time that a particular strain of bees is immune to a certain disease. It is more logical to secure well bred queens of any profitable strain. Probably with greater emphasis laid on the requirements of the Dutch Bee and with reports of successes published, she will come again into the limelight.—Ed., B.W.]

Handle Bees Gently.

By H. E. C. CARTER.

How often the expression " The bees know him" is heard among the audience when an expert is giving a demonstration in handling bees. The expert must however know the bees quite as well as the bees know him.

During a long experience I have found that most bees can be handled, but that each stock must be treated as a separate entity with its own peculiarities ; very few being absolutely unmanageable.

To subdue wild stocks and gain the confidence of gentle stocks by careful handling are the methods to use. It must be remembered that weather conditions, and abundance or scarcity of nectar, have considerable influence on what is called the **temper** of a stock. The proportion of old and young bees has also a bearing on the temper, young bees being more easily handled.

The **race** of bee must be taken into account ; Italians or Carniolans require little subduing, in fact the less disturbed the better for the manipulator, as these bees cling closely to their combs. Black bees vary considerably ; but as a general rule fly off their combs and hang about in a cloud round the hive entrance, some having an unpleasant habit of darting at the face or hands of the operator, without attempting to sting.

First crosses or hybrids are usually fairly easy to handle ; but " Mongrels " are always unreliable, and require care in handling.

Weather conditions have been mentioned as an important factor to be considered in handling. It is wonderful what a difference is found between fine weather and wet or cold weather examination ; during a fine warm day a hive may be opened with impunity, all combs exposed at once, the bees going about their work quite unconcerned ; but on a cold or wet day the same bees are quite different, requiring to be thoroughly subdued before any examination can be made. In the latter case, it is necessary to expose the combs as little as possible, using two quilts and covering up as one proceeds, being careful to remove traces of honey or comb at once. If bees are inclined to rob, it is always well to defer examination if possible. In cases of necessity, close entrances to one inch, disturb the bees as little as possible, so that any robbers can be dealt with by the guard bees, a thoroughly disturbed stock falls an easy prey to robbers.

Several instances have occurred lately of novices coming with a request that I will examine their bees for them, " They are so vicious " being the plea. In most cases I have found no difficulty in handling, without danger or inconveniently taking proper precautions. It is always advisable to use a veil for the sake of comfort ; a bee down one's neck or up one's nostril is rather disconcerting.

The following example of so-called vicious bees and handling of them will explain itself.

Two stocks said to be hybrids but of decidely uncertain parentage were said to be very vicious ; in fact a gardener who professed to understand bees and charged for his services in connection therewith had made an attempt to attend to these hives, but covered them up hurriedly and retired after being badly stung. I was asked to examine them, and proceeded to an unfrequented part of a large garden where the hives stood, a couple of bees darted at me at once but stopped short and returned to their hive," Evidently unused to human company " was my comment.

A little smoke was puffed into the entrances, the roof of one hive lifted off and quilts carefully lifted off, frames being immediately covered with a calico quilt. This was carefully folded back, exposing the division board and end frame, between which had been built a full comb (so hastily had the gardener retired that he had not even closed up the division board), this was removed and frame replaced, a second quilt was placed over this frame and the first quilt rolled back exposing a second frame, this was carefully removed without jarring and replaced. The whole ten combs were similarly dealt with, and after the brood chambers had been reduced to something like order, a section rack was placed on each hive. This was all done on a cloudy evening and without any inconvenience to the owner, who stood by the whole time, or myself.

Nowwhat happens when beekeepers find their bees develop temper. Often a bee owner (we will not call him a bee master) goes to one of his hives, pours smoke into the entrance, wrenches off the roof, kicks one of the hive legs, and thoroughly rouses the bees. He next strips off the quilts and puffs volumes of smoke at a cloud of angry bees who distribute stings freely. Next the division board is separated by main force and the frames torn away from the propolis, no attempt being made to ease the frames by rocking them. A few days later the process is repeated; the bees get alarmed and treat every passer-by as an enemy. This is not the way to become a successful bee master.

If you get stung do not blame the bees; probably you have caused the attack by a careless movement.

It is quite possible to open a hive with so little disturbance that the bees may be observed going about their ordinary hive duties; the queen passing from cell to cell depositing eggs, the nurse bees feeding the larvae, the field bees depositing their loads of nectar or pollen, and even the guards challenging the incoming bees.

To be successful treat your bees as valuable friends.

[The **manipulating season** is now over, but Mr. Carter's article is intended for study and consideration at all times. As a foot note we would add that the later his sound advice is tested next spring, the better its truthfulness will be revealed. It is a crime to open a brood chamber even in the South of England before mid-April and then only under favourable conditions. Exceptionally favourable manipulating factors in late March are sometimes met with, but these do not count. The risk of the destruction of the queen then is too great, in spite of every gentleness in handling, unless the temperature happens at such a time to be exceptionally high (a rare occurence), and the bees become very interested in foraging, this diverting their attention from the disturbance.

During the robbing season we have been repeatedly forced to open hives late in the day to begin with, and finally at all times. **To trick robbers** we had to devise the plan of moving a hive a long distance from its origianl site, generally leaving at the latter a board for the flying bees to alight on. After quick manipulations, the hive is promptly returned to its original stand, leaving the robber bees, whether few or many, dancing at the deserted manipulation site. Their number will not be appreciable until after a number of colonies have been examined and it is possible to avoid that by having distant manipulation sites. This plan applies of course to a large apiary. In theory it may be thought creative of robbing, but in practice and with careful management, it does not.—Ed., B.W.]

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Honey Production and Swarm Control.*

By The Rev. W. HENRY RICHARDSON.

The contribution of Mr. C. P. Jarman brings before us matters of high practical importance. Honey production and swarm control are rightly wedded; they almost form one subject. Bees must never be left to their own vagaries if valuable nectar is sought by the apiarist; swarming must be controlled. One of the principal things to provide, as your penman points out, is ample room for the queen. For success it must not be **more** than ample. The "room ahead" idea is right when modified. If it provided very much "ahead" disaster will almost inevitably follow. Conservation of necessary heat for brood rearing should be always in the reckoning of every beekeeper. It is just as essential as ventilation.

Of course we deal with 10-frame brood chambers. Some of us adopt a 12-frame system. At normal times native bees and average Italians need no more than ten. At the height of the season, however, bees of every race worth keeping demand more accommodation or they will seek it elsewhere. Some bees have whims and do not work to the general law, but increase of accommodation is usually the motive of migration. Hence the discussion of Mr. Jarman as to when and how it should be supplied.

(1) As to time It is not a case for the instinct of the bee-master Quick decision may be demanded, but reason must precede the judgment. If more room is given it should be because the following facts present themselves in combination:—(a) a brood chamber packed with mature and healthy bees; (b) most of the frames full of brood, much of which is ready to hatch; (c) indications that a good supply of honey is being tapped (d) added to this should be a consideration of the outside temperature It is folly to expect even our best stocks to occupy supers in the middle of July if the thermometer reminds one of March.

(2) As to method. I am not enamoured of the system suggested in paragraph numbered 1. Amateurs have followed it and sadly failed, the queen in some instances not being able to display the full power of her fecundity for weeks in succession. Leave out the excluder and the case is different. There is then no need to coax the queen or bees to the lower chamber A better method is to wait until the conditions aforenamed (a, b, c, d) are supplied and then to lift the brood chamber, placing one filled with drawn-out combs or foundation beneath. This will speedily be occupied. When the work in that chamber is well advanced, the apiarist should make sure the queen (if of ordinary fertility) is there and place an excluder between the compartments. If the queen is of A.1. quality, supering must only take place with a brood nest of 20 standard frames, in which event the excluder can usually be discarded. In each case shallow frames should be started in a non-swarming chamber to be transferred as occasion demands to the summit of the hive. There the stores should be left till near the end of the season for ripening. The suggestion that sealed frames may be extracted and replaced should only be recognised in the emergency of a clogged brood nest

The warning of Mr. Jarman in paragraph numbered 2 is timely. Few queens will need 20 standard frames, but many will need more than 10. For this common occurrence our friend offers no guidance. Why not use 10 shallow frames to supplement the original chamber allotted to brood and from these exclude the queen at the closing of the honey-flow?

As to the suggestion that frames of brood should be taken periodically from the brood nest can it ever be wisely adopted? The great demand is for bees—bees in enlarging armies—and we can never have stocks too big when working for surplus. Then why deplete our stocks to avoid swarming? If we cannot prevent migration by judicious expansion of hive space, the spirit of the bees is such that removal of frames may be a farce and keenly disappointing to the anxious beekeeper.

The preparation of bait combs by the most forward stock in the apiary will often result in dissipation and cannot be commended. Bees will not invariably ascend through the excluder to care for brood, and should a few chilly nights follow the new chamber would become a mortuary.

In spite of these criticisms I acknowledge the article of the worthy Editor of **Bee Craft** to be a valuable contribution—helpful, interesting and thought provoking; and, perhaps, above most others, beekeepers need making to think.

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The Progressive Development of British Bee Culture.*

By FREDK. P. SMITH.

In considering this matter we at once come against the fact that the Isle of Wight disease at present bars the way and that its suppression is the most important thing to work for. But on what lines must we work? Before giving an answer we had better review what has been done where equally virulent diseases have occurred in other animals, and if we find that one method is universally employed we may assume that it is the right one to adopt, and that of all methods tried that one alone has survived. Anthrax, swine fever, foot and mouth disease, rabies, etc., are kept under by the stamping out method—the extermination of all infected animals the thorough disinfection of their bodies and of all that has been in contact with them.

Every very virulent disease to which domesticated animals of consequence are liable is treated by the stamping out method. This then is the method to adopt to get rid of the bee disease, but having regard to Government schemes let us consider other methods. As econd method is to search for a variety or strain which shows itself to be most immune and then develop and multiply this while suppressing all others. A third method is by research (which demands the highest skill and often years of labour) to find and isolate the germs producing the disease, then to so modify them that when introduced into the system by inoculation they produce only a comparatively slight disturbance, yet render the system immune to the ordinary germs. At the same time search is made for a drug or other preparation which will prove an efficient germicide.

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* Prize Essay

* Prize Essay.

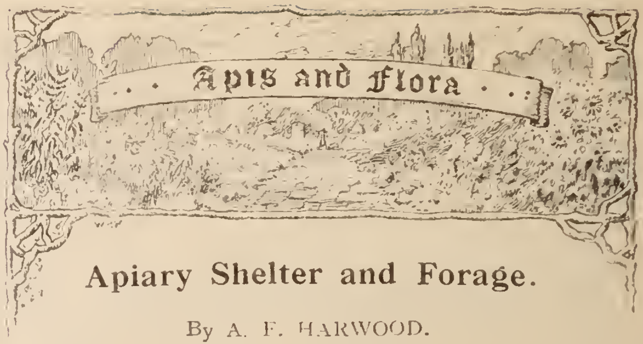
Now let us consider the Government schemes. Assuming that they are issuing the right strain, this is on correct lines, but there is no suppression of undesirables, and it is probable that the descendants of the imported queens, by mating with the undesirables which far out-number them, will produce a progeny less disease resisting than themselves. Now with regard to research, so far as we know they have stated that the disease germ has been found, but equally capable workers doubt this. I think no new germicide which is applicable has been suggested. Assuming that a germicide is found there is the difficulty of being certain that every individual bee gets a suitable dose and gets repeated doses.

Concerning inoculation the numbers are prohibitive. There is another matter of first importance, comparatively few persons have the requisite knowledge and care to successfully treat a case of germ disease. Taking all these matters into consideration we may say that the Government scheme will fail in that it has not adopted the only method that has been found successful in dealing with virulent diseases. Respecting future legislation there is little hope. The reply to questions in the House of Commons a few weeks ago was in effect that it would depend on the unanimity of the beekeepers. Such a reply would be given by an ignorant or a timid administrator, or it might be a matter of expediency, as no contentious measure would have much chance, but those in authority ought to be capable of leading. Would any of these acts have been in force, take for instance that relating to swine fever, if the passing of it depended on the unanimity of the pig keepers, Certainly not. Our hope is that this bee disease is near the end of its cycle and that it may shortly vanish as other virulent diseases have done.

Twenty years ago, foul brood was a much greater scourge than it is at present. What else can we work at? The invigoration of the bees generally by rearing queens and drones from the most desirable stocks. This has been made more practicable by hives recently placed on the market in which due provision is made for this. Also, the design of hives and fittings must be improved, especially with reference to disinfection which must be done periodically, and with reference to lessening the radiation of heat, the proportion of width to depth of frame must be altered more in consonance with the proportions of the natural comb. The width of frame is too great for the depth. So also with the body box, this ought more nearly to approach the form of the cube to lessen radiation.

The W.B.C. ends, although ingenious, are harbours for undesirables. The future frame will probably be moulded complete from one of the non-metallic substances which lend themselves to the work, the top bar being in the form of a Tee girder to give more bee space, or possibly the frame may be formed and moulded of reinforced concrete. The aluminium combs will allow of greater speed in the extractor. The uncapping knife will probably be superseded by a revolving wire brush, or it may be that a speed may be possible which will burst the cappings and allow the honey to flow out without previous uncapping.

Heather honey may possibly be extracted from them. As to management, may I mention a personal item? For years I only kept one hive, never had a swarm and never took less than 170 lbs. of honey. One year I took 204 lbs. I never extracted from the brood chamber, but had always to feed for winter, they stored nearly all in the supers. It was a ten-frame W.B.C. and worked with three supers. I have since wondered if the absence of swarming and absence of disease was due to a simple matter. The naphthaline I then used was in the form of fine crystals, and I periodically lifted the covering cloth and sprinkled a little in. During honey flow nights the roar of the fanning could be heard 20 yards away from the hive. Was the excessive fanning which the naphthaline produced the cause of the non-swarming and of the absence of disease?



Apis and Flora

Apiary Shelter and Forage.

By A. F. HARWOOD.

Many beekeepers whose management of their apiaries in other respects leaves nothing to be desired, yet forget or ignore the importance of two things. First, the provision of some shelter for hives in exposed positions, and second, the desirability of having some forage close at hand to be available when low temperature and high winds prevent distant flights in early spring.

These two points are closely related and I propose to indicate some means for supplying both.

Taking them in order, it will, I think, be obvious that the temperature of hives swept by the cold winds of early spring will be lower than that of such as are effectively screened. One consequence of this is a slowing down of the rate of breeding, so important a factor at that season. Further, flying bees are lost and this loss occurs at a time when they can be least spared.

For these reasons alone it would surely pay to erect a windbreak, but when we consider that it may be made not only to fulfil this purpose but also to supply near-by pasturage, obtainable with a minimum risk and expenditure of time and energy, the desirability of this course is emphasised.

Unlike a shrubbery which has to be kept on the note of suburban primness, the screen of flowering shrubs should rarely feel the knife.

Height and spread are wanted, so too is the bloom, and close cutting in would defeat our purpose in all these respects.

A judicious blending of evergreen and deciduous subjects is best, and in planting regard should be had to the proper distances in view of the average dimensions of each shrub.

Of the evergreens, laurus tinus is, perhaps, the most valuable, owing to its long flowering season and close habit of growth.

The veronicas—**buxifolia, traversi** and other forms—with Coloneaster **Simmonsi,** berberis, and—if it can be allowed to run up and flower—holly, are all useful.

Among the deciduous subjects, ribes—**sanguinea** and **aurea,** the red and yellow flowering currants, Forsythia suspensa, buddlea variabilis, the genistas (brooms), especially andreana, eleagnus longipes, deutzias and symphoricarpus (snowberry) are good. Syringa, philadelphus (often confused), weigelias are useless to bees; privet worse than useless. Arbutus, escalonia, catalpa, sumac, prunus pissardi can be introduced in standard or half-standard forms.

Replies to Queries.

Q. Do bees gather any surplus from ivy if the plant is abundant and the weather mild?

A. Yes. Ivy blossom furnishes both pollen and nectar freely. The nectar is quite distinct in colour and flavour. This latter is not agreeable to many palates and should be left for the bees, to whom it and the pollen are very valuable.

Q. Does veronica yield a surplus, and what is the honey like?

A. Veronicas are rarely, if ever, grown in sufficient numbers to yield a distinguishable surplus. The nectar from V. buxifolia and V. traversii is water-white and delicate in flavour.

Q. Does gorse yield a surplus, and what is the honey like?

A. Gorse is at its best just when breeding is at its height and is most valuable for pollen. All nectar from gorse is consumed in the hive.

The Press Mirror.

L'Apicoltore.

HONEY PRICES.

L'Apicoltore of Milan, Italy, informs its readers that they must not be surprised if they notice that the prices of honey are so much increasing. This is not merely because of the advance of the price of sugar, but is principally due to a great number of families using honey as one of their chief articles of diet. The excess of demands and the shortage of supplies compel beekeepers to raise their prices.

If the high prices of honey had brought private profit, they had equally contributed a big mischief to the Bee Industry, because had beekeepers been able to sell at the usual prices, this would have greatly helped their future. But was that possible? No! and why? Because Italian beekeepers are not able to sell their honey as they would like, and are obliged to dispose of it to a committee organised to control all the honey sold.

The Toronto Globe.

RATIONING BEES IN BRITAIN.

The British Food Controller has added a new one to the many tasks that still confront him daily. This time it is the providing of sugar rations for 'social honey-gathering hymenopterous insects of the genus apis,' otherwise bees. Ten pounds of sugar are to be allotted for each hive as artificial feeding to ward off starvation, and it is presumed that anyone who tries to get the ration for human busy bees, instead of the genus aforesaid, will be badly stung. Very few people succeed in fooling the British Food Controller and his regulations more than once. No doubt, a ration card will be an accompaniment of the plan, and the British have been so apt at adjusting cases to circumstances during the war that some budding genius may invent an article whereon bees with stings may punch receipts for themselves and their co-workers.

The rationing of bees is a gentle reminder to some restless people who think unrationed Canada has too many irksome restrictions, that plenty in Britain is a word only especially in respect to food. Many who express their dissatisfaction with Canadian laws and regulations are finding on reaching Britain that bees are not the only things that sting.

The Canadian Horticulturist and Beekeeper.

WINTER STORES FOR BEES.

In the experiments with bees at the Experimental Farms, it was early recognised that the nature of the winter stores is an important factor in successful wintering, and the experiments have confirmed this. Experiments at the Central Experimental Farm indicate that **clover honey** (alsike and white clover) makes reliable stores for wintering, but poor results have followed the use of stores that granulate hard during the winter. [The same rule applies to **hard bee candy,** not an uncommon production on the market, which is generally accepted by unfortunate novices, but refused by their starving bees.—Ed., B.W.] A colony wintered on **dandelion honey** came out in spring very weak; the honey had granulated hard and the bees had uncapped it but could use very little of it. In some years a **mixed honey** that comes largely from clover, sweet clover, and other plants granulates hard with the same result and causes heavy loss. **Buckwheat honey** has been found wholesome, but some of the other **honeys gathered in the fall** have been found unwholesome especially in marshy places in Nova Scotia and have caused dysentery and death. In one season in Northern Ontario, the fall honey was not capped over and failed to ripen and soured, causing dysentery and heavy loss. **Honey containing juices** collected by the bees **from over-ripe fruit** killed a colony before spring, so also did **cane syrup** used as an exclusive food for wintering. **Syrup made from refined sugar,** two parts of sugar to one of water, fed to the bees in the **early** fall, has given fairly good results [—this does not mean perfect results—Ed., B.W.] as an exclusive winter food, and has been found to be the best practical corrective for stores that are slightly unwholesome. [Note the words "practical," which presumably means easily obtainable and cheap, and "slightly," as otherwise grossly fermenting food will never be corrected by the addition of any form of unwholesome diet, as one cannot depend on the bees ignoring the former.—Ed., B.W.]. Year after year at the Central Farm, colonies on natural stores that have been fed liberally with this syrup come out stronger in spring than those that have wintered on the natural stores alone. [Were all other conditions equal? Were these natural stores of the desirable kind? What about the influence of artificial feeding, whether slow or rapid, in stimulating **autumn breeding,** and thus contributing to the wealth of the hive in young members destined to survive the winter?—Ed., B.W.] Syrup made from raw cane sugar has given less satisfactory results than that made from refined sugar.—**Experimental Farms Note.**

The American Bee Journal.

THE BARBEAU QUEEN-REARING SYSTEM.

We have received a number of enquiries concerning the above system, described in the July number.* Although we have not tried it ourselves, owing to lack of time, we are informed that it is quite successful, and the fact that Mr. Barbeau offers it free to the public should not deter beekeepers from the appreciation of it. Replying to our enquiries, Mr. Barbeau sent us the following letter from one of his pupils, who owns several large apiaries. This we translate from the French: "I am glad to be able to say to you, in answer to your request, that I have well succeeded with your method of producing queen cells. I raised **700** queens the past summer and obtained **90** per cent. of queens from the cells which I produced. With the old method, I succeeded in only **35** to **50** per cent. of the cases. Your method is better, for it gives less labour and secures more queens. The best way to succeed is to have plenty of young bees in the colonies that rear the queens. For that purpose I give the orphan colony some combs of brood ready to hatch.

To rear queens in time of dearth, it is necessary to feed the queenless hive two days before giving it the queen cells and continue to feed it for 6 days afterwards, provided it is strong enough.—Yours truly, O. Fontaine, St. Guillaume, D'Upton, Q."

The advice to keep the queen-breeding colonies fully supplied with young bees, and fresh food in plenty, is also strongly recommended by Mr. Barbeau, and this advice tallies with the experience of all queen breeders as well as with the recommendations of the writers of all the practical works on bees.

Gleanings in Bee Culture.

MILKWEED HONEY.

Mr John H. Lovell, the noted botanical writer and author of "The Flower and The Bee,"† an authoritative work on its subject, contributes to the current issue of **Gleanings** a most valuable article on "Milkweed as honey plant." In America, he says, already the milkweeds cover much land and are steadily spreading. There are several species, but the most common one is **Asclepias Syriaca,** a tall hardy plant with deep roots, which multiplies freely from seed. When once it has obtained a foot-hold, it is almost impossible to eradicate it. It blooms from early in July to the middle of August. L. C. Gordon, of Bellaire, who obtains annually a surplus of 50 pounds of milkweed honey per colony, writes that the flow of nectar is not affected to any great extent by the weather. The colour, he says, is very light, in fact, about the lightest honey produced in this section, and is very thick if left to ripen thoroughly.

Milkweed honey is described by Ira D. Bartlett, of East Jordan, as follows: It is very light in colour, except in unfavourable seasons, when it is a little darker, although it would always be classed as white. The flavour is something like clover but stronger, becoming milder with age. The body is good; in hot dry seasons it is very heavy.

THE BEE WORLD, August, 1919, p. 54.

† Constable & Co. 1919. 10s. 6d. net

Mr. Lovell has examined a sample of pure milkweed honey received from Mr. Bartlett, who says that it is slightly darker than the average. The comb is white, but the extracted honey is tinged with yellow, which would promote its sale with most buyers rather than otherwise. It had a very pleasant flavour, not at all pronounced, leaving a fruity tang, perhaps a little suggestive of quince. He considers it **preferable to clover honey**, and as being well suited for table use, deserving to rank with the best of American Northern honeys.

As much as 15 or 16 pounds of milkweed honey has been stored in a single day; but 4 to 6 pounds is nearer the average...... An average of 11 pounds per day for ten days is said to have been obtained in some instances.

The Western Honey Bee.

BEEKEEPING IN CHINA.

By the Hon. S. S. Knabenshue.

The Editor of **The Western Honey Bee** replies as follows to the following questions: (1) To what extent is beekeeping carried on in China? (2) Is section honey produced, and is extracting practised? (3) Would it be advisable for a young beekeeper to go to China to make his fortune?

Mr. Knabenshue says (1) that he lived for five years in Tientsin, a city of some 800,000 Chinese, on the Peiho river, about 40 miles from the sea, and 98 miles south-east by rail from Peking, the capital. Honey was on sale in both Chinese and foreign shops in Tientsin, usually in jars. The writer never saw or heard of a colony of bees in that region. But there is no doubt that bees are kept in some parts of that huge Country—for China is greater in area than the continental United States, having four million square miles, with a population of four hundred millions. The people being largely agricultural, the low plain country is very densely populated. Peking stands at the foot of the hill country in North-Eastern China, and from it to the sea the country is a dead level, being in fact made by the mud which the rivers have brought down during the centuries. It is intersected by many canals, and every available acre is cultivated with extreme care. But the crops are not such as produce honey, if we except the soya bean, which is very largely cultivated. There are very few trees, they having been cut down for fuel, and the stumps dug out to burn. There is no brushwood, and no honey plants, apparently. In the fall, the whole country is gone over by the natives with bamboo rakes, and all grass and plants, with their roots, are gather for fuel. When the Indian corn is cut, the stumps and roots are gathered to aid in keeping warm the miserable mud huts in which the farmers live. The whole Country is as bare as the palm of a hand. Peking is on parallel of 40° north latitude—the same as Denver, Columbus, O., and Philadelphia; but the winter climate is much colder than that of the same latitudes in the United States.

Southern China is of course warm, for Canton lies nearly on the Tropic of Cancer, and the hill country from the Yangtse valley Southward very probably is suitable for bee culture, and without doubt the natives pursue the industry—but very probably on a small scale, each beekeeper having a few colonies.........

(2) Probably section honey is produced on a small scale where bees are kept, but it is doubtful if extracting is done on any but the most limited scale.

(3) We would advise against anyone going to China to pursue beekeeping as a road to fortune. His wise course would be to go over to Shanghai or Canton, or both, and make a personal investigation.

The Domestic Beekeeper.

HIVE MOISTURE.

By Fd. H. Clark, St. Paul, Minnesota.

Hive air is made dry by condensation of its moisture on the inner walls of the hive, when these walls have dewpoint temperature. Some of the moisture under favourable atmospheric conditions passes out of the hive by ventilation, but the thing that bees can depend on under all conditions is **condensation.**

Bees varnish the inside of their hive with a purpose, which is to make a surface that will condense more moisture than plain wood. [Our readers will recall a contribution by the Editor of this magazine to **The British Bee Journal** some months ago on the subject of remedying hive dampness. He advised varnishing or painting the inside of the hive. so as to facilitate the condensation of moisture, which may then run out of the entrance, or with the cleaning system of an "Insulator Hive" would filter to the bottom floor board, which is also painted. The latter may be attended to from time to time. No doubt these suggestions,when appeared, afforded amusing topics for the week end to same people. It is encouraging to find an American apiarist of experience supporting in a different form the same view.—Ed., B.W.]

Propolis is an excellent radiator of heat and is a great aid to the bees by making easier attaining the dewpoint on the inner surface of the hive.

This is the way that the hive air is kept dry enough to give it drawing power to pull the water from the honey.

Proceedings of Associations and Clubs.

B.B.K.A. CONVERSAZIONE.

The British Beekeepers' Association are organising a Conversazione of members and friends of the Association, which will be held at The Central Hall, Westminster, London, S.W. (Nearest Station, Westminster District Railway), on Thursday, October 23rd, 1919 (Dairy Show Week). Tea will be provided for all at 5 p.m.

Subjects.

4.0 p.m.—"The Difficulties of Queen Rearing," by Mr. G. Thomas.

6.0 p.m.—"Wintering Small Stocks and Nuclei Indoors," by Mr. G. Bryden.

7.0 p.m.—"The Best Methods of Increasing Stocks of Bees," by Mr. W. Herrod-Hempsall.

The Papers will be limited to ten minutes and the discussions to fifty minutes on each subject.

It is hoped that Members will contribute to the success of the first Autumn Conversazione since the War by bringing as many friends as possible. Ladies are specially invited.

In communicating the above notice, it is surprising to find that the Secretary of the Association has been obliged to add the following note: "Members are reminded that subscriptions for the current year became due on January 1st last. To save expense and time in posting individual reminders, it is earnestly requested that Members who have not already done so will pay their subscriptions as early as possible." Members will also greatly assist the work of the Association if they obtain New Subscribers, or increase their own Subscriptions."

Probably no few amongst those who have not contributed to the Educational Fund of the Association belong to the group of the malcontented. It is natural that a big Association should be the meeting point of many hopes and expectations, but it is hopeless to imagine that such hopes could be realised without adequate funds. Such a useful Conversazione alone will cost an appreciable sum, and it is unfortunate that many people are experts in destructive criticism, but not in constructive aid.

In making ourselves some critical comments to the Secretary of the Association regarding a scheme of research work, under the auspices of the Association, his reply was most courteous and sympathetic. He expressed his willingness to submit to the Council of the Association any definite scheme that may be planned Yet from whatever angle we examine this matter we find that it is principally a matter of finance, and so long as the rich patronisers of the Association can only pay an annual membership fee of five shillings, or a small multiple of it, it is a farce to indulge in blaming the Association for not conducting experimental work, which, logically enough, should not be left entirely to the State.

The **B.B.K.A.** has undoubtedly been at the back of the official Re-stocking Scheme; and whatever the shortcomings of this scheme may be, it is decidedly a remarkable step in the right direction. It is, at least, a sincere and a spirited attempt to regenerate British beekeeping, and to raise its standard to a higher level.

May we hope, therefore, that the occasion of the Association's First Autumn Conversazione will not merely end in passing votes of thanks, but rather in a greater determination to support in a substantial manner its work of reform.

QUALIFICATIONS OF THE SCOTTISH B.K.A.

The increasing popularity of the qualifications granted by this influencial and dignified association merit our early remarks for the benefit of our readers, who are preparing for professional qualifications in bee culture.

The Scottish B.K.A. grants "Certificates for proficiency in Practical Beekeeping to candidates who satisfy the Examiners that they possess the necessary qualifications. There are two Certificates, viz:—The **BEEMASTER CERTIFICATE,** which every observant practical beekeeper ought to be able to gain; and the **EXPERT BEEMASTER CERTIFICATE,** the possession of which indicates that the holder may be considered an authority, capable of giving advice and aid to those needing information or help. If a successful candidate in either the Beemaster or Expert Examination can pass the tests for judging honey, the clause '**and honey judge**' will be inserted in the certificate."

The standards of both examinations are very satisfactory, and the successful candidate should feel quite proud of his or her achievement.

We learn that since these examinations were instituted last year, the applications for examination have been numerous; but only fifteen have been successful in passing for the Expert Beemaster Diploma **(E.B. : S.B.A.)** hitherto. The Beemaster Certificate **(B. : S.B.A.)** has been gained by forty candidates, and there are several examinations still to be held. The applications have come from all parts of the Country.

The names of the successful candidates for the higher professional diploma **(E.B. : S.B.A.)**—all of whom are recognised authorities on beekeeping are:—John Anderson, M.A., B.Sc., Aberdeen. Rev. John Beveridge, M.A., B.D., Gartmore, A. Aikman Blair, Edinburgh; William Brown, Elgin; Henry Crombie, M.A., Dunkeld; John R. Dickson, Alloway; Jas. H. Laurlands, C.E., Dundee; Donald MacDonald, Mill House, Argyll; Affleck Macpherson, Grantown on Spey; John W. Moir, B.B.K.A. Expert, Edinburgh; Thomas Pate, Milnathort; Mrs. Grant Peterkin, Grange Hall, Farres; Miss N. M. Robinson, B.B.K.A. Expert, Aberdeen,; Thomas Robertson, Fortingall, Aberfeldy; Leonard M. Thake, Agric. Coll., Edinburgh.

A full prospectus of the examination may be obtained by applying to the Hon. Sec., Mr. Henry Crombie, M.A., of Spoutwells, Dunkeld.

THE DEVELOPMENT OF THE APIS CLUB.

With so much talk in the air about research work, which is never meant or attempted, and with so many beekeeping schemes that are a temporary fancy, which is well advertised before realised, there is no pleasure for us in airing ideas that have not yet been fully developed. However, much as we value the confidence placed in us by many old friends, both in this Country and abroad, and greatly as we appreciate the equal confidence that has been extended to us by many readers, whom we have never had the pleasure of making their previous acquaintance, we believe we owe to the latter some additional information regarding the development of **The Apis Club**, for the preliminary organisation of which we are temporarily responsible.

Neither THE BEE WORLD nor the **Club** have been brought to the notice of the British Bee Community until they were an accomplished fact, and if they are still in a rudimentary form, we have only to be thankful that they are still existent, since the obstacles which we have come across are such that we might easily have forsaken our task with honour at the very commencement, and hardly any one to blame us. Only those who thoroughly appreciate our position and activities despite ill health, and who are acquainted with our aims, will quite understand why we are not led into self-conceit through so many showers of compliments about the little that has been accomplished. It is far from approaching to our ambitious scheme.

We could easily have started the work in another Country, and we believe with a gratifying measure of success. But we owe a good deal of our education to British teaching; and the atmosphere of democratic liberty in this Country did not fail in addition to influence our preference.

Every candid beekeeper in Great Britain will admit the wide gap in intellectuality and research that exists between the days of Cheshire and the present period. We are faced here at present with the most pitiful type of intrigue and unhealthy rivalry between various beekeeping organisations and also between Trading houses. Co-operation is little known, and its champions are often considered meritorious of insults as hypocrites and the like. The brains of excellent beemasters are not missing, but instead of mutual co-operation for the advancement of beekeeping, their valuable energies are wasted in petty jealousies and personal rivalries. Our balance sheet from a broad point of view is consequently almost blank, so far as steady experimental work is concerned. It is not worthy of the educational standard of this Country. There is no cause for a racial pride other than tradition, but there is every cause for pride on the part of everyone in his or her own achievement; and much as the accomplished work may be valued, the activities of the British Bee Community are far below the possible standard that they can and ought to achieve. They are debarred from it by constant dissensions. We repeat therefore that no leading British apiarist of ability and knowledge, which he is liberally wasting instead of utilising for the real service of his community, has a right to be proud of Cheshire. He had better consider his responsibility to his own days.

Much deploring this sad picture, we repeatedly welcomed joining one constructive scheme after the other, when we expected it a creative means of amity and co-operation, but for one reason or the other, our disappointment increased.

We finally thought of an educational scheme associating literature with research and international educational relations, our principal aim being to divert the much wasted energies in strife to a better avenue of co-operative study, to the establishment of international scholarly ties, and also to contribute our little share to the uplifting of the educational standard of beekeeping in this Country.

Almost single-handed at first, we succeeded in inaugurating THE BEE WORLD and **The Apis Club,** and have achieved by bringing together as members of the latter, men and women of different schools, both great and small, who would never otherwise have cared to meet. They did not want to forget their personal quarrels, but they finally did. And we hope this small achievement is only a beginning of **a greater comradeship in the Bee World, both National and International.**

The Club is not a set of rooms, but a spirit of Association. It already possesses a respectable number of members of different beliefs and creeds, and its list of membership is growing daily. Whilst some prominent apiarists who should set a good example to others are still mere spectators, many have not found it beneath their dignity to join its rank and file. It has already a Reading Room, a little Museum, an Experimental apiary, a Training apiary, and a literary organ, endeavouring to sow friendship and co-operation, instead of dissentions and oppositions.

We consider these aims worthy of the spirited support of international apiarists everywhere, and principally in Great Britain. It is our sincerest hope that once the **Club** has maturely developed, it may be handed over to a Council representative of all bee keeping organisations in Great Britain and with international relations. If it is to be a success, this can only be through maintaining its educational and impartial traditions, and not by becoming a new method of partisanship.

Many apiarists have attributed to us the present success of the **Club** and THE BEE WORLD, which could never have been achieved by our lonely efforts. The principal credit is due to those loyal colleagues who joined under the abbreviated and coined business name of "Adminson," and trusted us with the organisation of their business. Through the inconvenient position of the Editor of this magazine as Chairman of the Company, an acknowledgment of their invaluable help would almost have amounted to self publicity, but in view of the exaggerated attention which we are personally receiving, this recognition cannot be avoided. Not only did they provide free and respectable offices for the **Club** and carry our wishes to an extreme, but have so far contributed to its Educational Fund, at the time we write these notes, over two hundred pounds. The balance sheet of the **Club** is open to the inspection of members and donors. They have borne much sacrifice in business for the sake of establishing the much lacking confidence

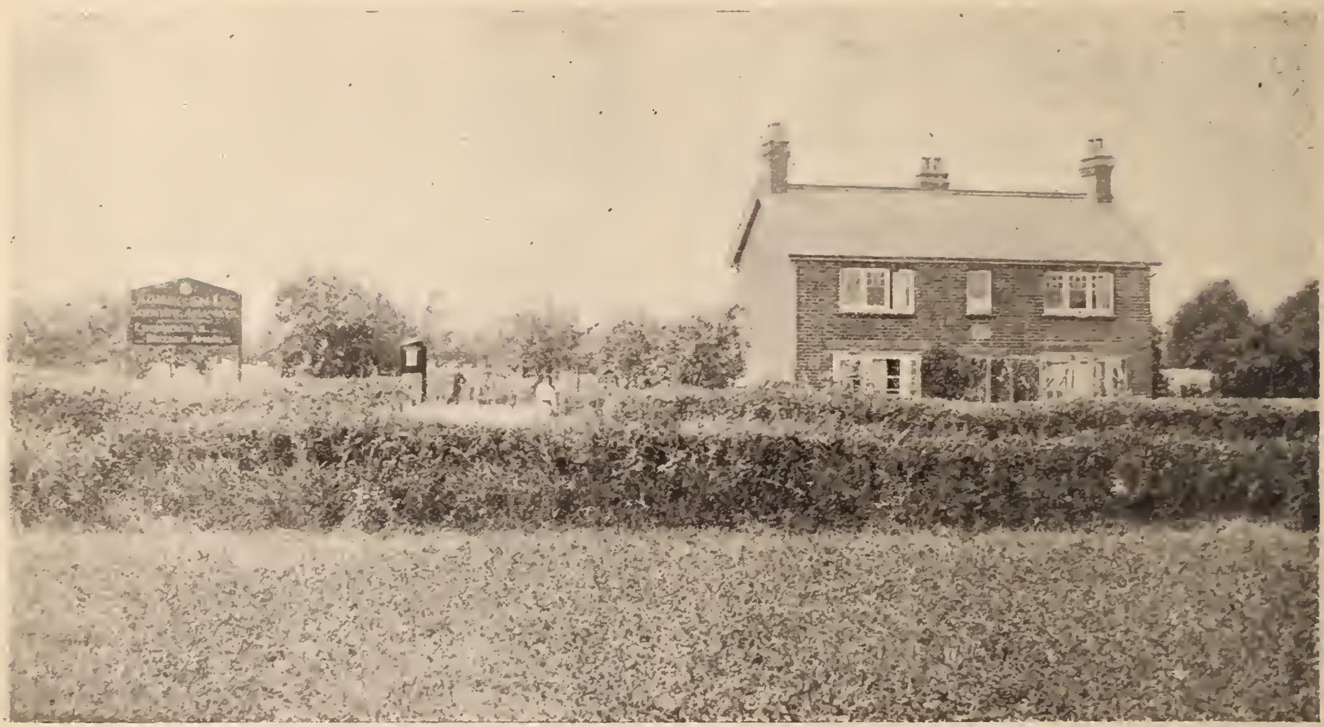


Fig. 18.—Port Hill House. The window of THE APIS CLUB Reading Room (Top Right-Hand Section) exhibits a small protective porch for the service of bees kept permanently in a single-combed observatory hive, which is maintained for the purpose of regular study and for the benefit of visiting members.

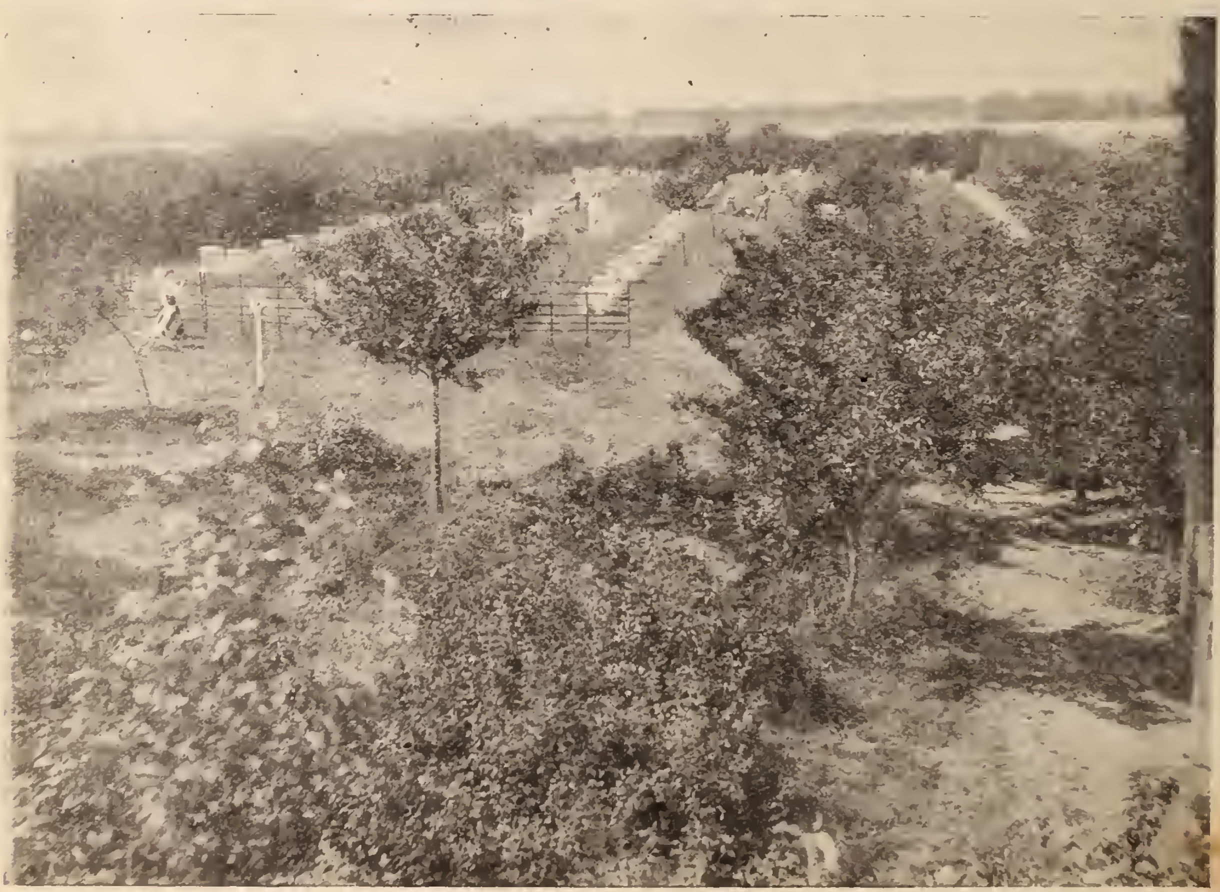


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Fig. 19.—A Section of the Breeding Apiary of Messrs Adminson Ltd., Benson, Oxon. July, 1919.

amongst beekeepers here. They did not hesitate to refuse business orders in order to supply members of the **Club** with their requirements at an appreciable discount. Not a single member has been disappointed in any form.

Needing beekeepers, especially those who have suffered through the war, have not escaped our full sympathy and consideration. A nucleus for the price of a virgin queen was not denied; breeding queens disposed of as selected and tested, and even for the price of virgins, were not considered with resentment. Free interesting specimens of queens to members interested in experimental work were readily distributed. Those members who have criticised this policy, as being charitable instead of co-operative, did little realise that if it did effect nothing other than a revival of a feeling of trust amongst those sorely stricken plain beekeepers, its adoption was certainly worthy of our attention.

If Messrs. Adminson—in whom we have by no means a predominant business interest at present—have gained so much reputation through their direct and indirect support of the bee literature, and not only by aiding THE BEE WORLD and by patronising the results of our labour, when some other business houses appeared to hesitate, the same opportunity has never been denied and is still never denied to others. This Company paid six pounds per issue for the front advertisement page of our magazine—a record in the advertisement charges of the Bee Press in this Country, although a perfectly modest charge in view of the present industrial conditions—when some other big firms have been hesitating about half-inch advertisements......

Members of **The Apis Club** should know that THE BEE WORLD is edited gratuitously and at a much personal sacrifice, especially when one is forced, for the sake of greater economy, to do too much of the office boy's work, to give little attention to the literature, and to be forced to write such notes as these after midnight, when they themselves are naturally enjoying their repose. The paper in reality belongs to the **Club**, as our proprietorship of it is only a prestige safeguard—if we may so express it— in case the **Club** would refuse to publish it and we wish to continue its issue independently. They should equally know that, in spite of additional free assistance, the **Club** has never yet succeeded in reducing the regular **monthly loss** on the issue of this periodical below **sixty pounds.** Members when reviewing this frank statement, which they are entitled to investigate, should then appreciate our difficulties, and avoid as much as possible increasing them. Our greatest concern for the time being is just to cover the cost of production. Punctuality of issue does not worry us at present. This number, for instance, could have been transformed into two or more issues, if it were merely a question of a number of pages and a cover As we said from the beginning, it highly interests us to see the magazine produced in a dignified form, however weak and modest it may be at present. Members may depend that we shall do our utmost to gratify them, but if it is possible to achieve the difficult, this does not mean that it is within power to achieve the impossible. Our course depends on the magnitude of material support which we receive. Compliments will not supply bricks and mortar.

THE BEE WORLD does not represent a professional newspaper suitable for press cuttings, but rather a literary and a scientific bee magazine for practice and reference. Much as we appreciate the extensive lending circulation which it has attained, principally through the spontaneous and disinterested enthusiasm of leading members of County Associations, we regret that we cannot possibly replace damaged copies, inasmuch as the first three numbers of the magazine are entirely out of print, and second hand copies are difficult to obtain. It is further not within our power with so little advertising support to appreciably increase furthermore the printing issue, which is already double the original one.

Under the circumstances, we are forced to limit the circulation to members of **The Apis Club,** although we are asked by a leading firm of newspaper agency for its distribution through the bookstall system, but unfortunately every copy sold in this way is a serious financial loss to us. Although a **uniform** membership fee to new candidates of seven shillings and sixpence per annum will be adhered to—(at least so long as we lack sufficient advertising support)—commencing this number, in the light of the much increased cost of production, we trust that members of the **Club** will realise however that this fee does not reach more than one eigth of the annual cost of production per copy, and that it is our sincerest desire to reduce it at the earliest possible opportunity to the lowest possible minimum. It is aimless raising the ordinary subscription fee, and the fairest course as suggested to us by many members since our last issue, is to limit the circulation to members of the **Club** and to adopt one uniform fee to all classes. The fee itself nowadays is not above the means of the humblest smallholder. One Shilling and threepence per month is certainly not a serious problem, and it is no favour to us. Those who can augment our displayed advertisement section and those who are in a position to contribute to the Educational Fund, and thus relieve us of the worries of production, will certainly provide the only means for establishing this magazine on a sound basis.

Now, it is for every member to do his best constructively in more than one direction; and it is for every one of them to decide by his actions whether he would have the October number a better companion than this or a poorer one, or whether he would be indifferent towards the future of this magazine, and then he might possibly appreciate, and rather too late, its real educational value when non-existent. Such is the way of the world.....

NORWEGIAN BEEKEEPERS' UNION.

The reports to the National Norse Beekeepers' Union from all parts of the Country have now been received, and indicate that the honey crop for the year is far below the average. The quality, however, is specially good, both as regards colour and aroma. The committee representing the chief honey producing districts fixed the wholesale price for the crop at 6 kr. per kilog., or approximately 3/- per lb., for first grade honey.—John Beveridge.

THE I.B.K.A. CONFERENCE.

The **Irish Bee Journal** reports: A Conference of Delegates was held, on August 27th, in the **United Arts Club, Dublin,** at 3 p.m., the Baroness Prochazka, President, in the Chair. The Rev. J. G. Digges wrote expressing regret at being unable to attend, and Mr. M. H. Read was also unavoidably absent. Among those present were Messrs. McGrath, Mitchell, Wheatley, Ramsey, Weston, and Kavanagh. The following Resolutions were adopted:—

'That in view of the ravages of Isle of Wight disease and the absence of legal powers to deal with it by the Department of Agriculture, this Conference calls upon the Irish Beekeepers' Association to take whatever steps may be thought necessary to provide legal authority for dealing with this disease.

That in the opinion of this Conference, the Bee Pest Act is not sufficiently enforced, and, in order to facilitate the work of County instructors, the Department of Agriculture should be approached by the I.B.A. with the view of initiating compulsory registration of all beekeepers.'

ANNUAL CONVENTION OF THE NATIONAL BEEKEEPERS' ASSOCIATION OF AMERICA.

The following Resolution was adopted at the 49th Annual Convention of the **N.B.A.** of America, held in Chicago:—

"Whereas, your committee appointed......under a Resolution authorising its appointment for the purpose of formulating and reporting a plan for the organisation of beekeepers, realising that the basis of such organisation must be laid in the minds and hearts of the beekeepers themselves and must find its approval with them, respectfully recommend that a convention be called sufficiently representative in character to give weight to and command respect of its determinations; to that end be it:

Resolved, that the Secretary of this Association be directed to invite representatives of all organisations of beekeepers, teachers of beekeeping, and members of the allied trades to meet at Kansas City, Mo., in January, 1920, for the purpose of formulating and adopting a plan and constitution for a National Association."

The objects of the **N.B.A.** are mainly the affiliation of all beekeeping organisations in the United States for the development of the co-operative system of sale and exchange of apiary supplies and products, apart from the co-ordination of forces working for raising the standard of beekeeping both materially as well as educationally.

Secretaries of new Associations (and even of old ones) in Great Britain will not regret the trouble in studying the article on the **Policy and Aims of the National Beekeepers' Association,** contributed to the August number of the **Am. B.J.** by Mr. Chas. B. Justice, a leading figure in the association. The **Western Honey Bee** (of 121, Temple Street, Los Angeles, California,—an excellent magazine devoted to the interests of beekeepers in the Pacific Coast region) which gives a good deal of publicity to the working of beekeeping exchanges, will also repay perusal.

Our Book Shelf.

THE BRITISH BEEKEEPERS' GUIDE BOOK. *

By T. W. COWAN, F.L.S., F.R.M.S., etc.

The twenty-third edition of this most popular manual of British bee culture, will no doubt be welcomed by hundreds of our young apiarists, who have been disappointed for some time in their inability to secure copies of the previous edition, which appeared four years ago and was soon out of print. The work will no doubt equally interest old readers who take sufficient interest in the literature not to miss a new edition of a creditable work that should count in every educational and especially in every bee library.

To the new school of beekeepers there is hardly a chapter in the manual which does not contain principles that are strongly dissented from. It is not our intention here to offer a critical examination of these. Time and space forbid. So far as our humble views are concerned, the editorials of this magazine will give an expression from time to time.

Mr. Cowan is one of the few leading international apiarists who have not ultimately fallen into conceit. He respects everybody's opinion, however much he may differ from him. He does not tell us that what he does not know about beekeeping is not worth knowing; on the contrary, he strongly emphasises the desirability of an "international mind" which is always open for education. His educational principles, however, have not been adhered to by many of his disciples, since much of his writings inspires free thinking; yet, strange enough, only few of his many admirers profit by this inspiration. In his friendly message to our magazine he characteristically writes: "I was pleased to receive the first number of THE BEE WORLD and note that it is intended as an exponent of international thought and experience of the science of beekeeping. As such, it should form a useful addition to our literature, for however much we may know, we should realise that we have never learned everything, and I have found in my travels that if I kept my mind open, there was always something I could learn from beekeepers and their methods in other countries. I therefore wish THE BEE WORLD every success and hope it may fully realise your expectations."

For literary readers **The British Beekeepers' Guide Book** lacks the poetic style of the Rev. Digges, the noted Irish author and journalist; on the other hand, for the practical beekeeper, it is a genuine friend of a masterful personality, who speaks in plain language, a quality which counts for much in instruction. Many things which may be helpful for general reference are not included in the manual. Similarly the researches of Anderson, Rennie, and others have no reference to. But we believe the reason to be the fact that Mr. Cowan is far from being a compiler of literature in this particular book, but rather an authoritative apiarist of scientific and practical knowledge who cares only to give what his originality and experience dictate as correct. Furthermore, the work is not intended as an A.B.C. of British Beekeeping, but as a beekeepers' companion and guide.

Neatly illustrated and printed, and tastefully arranged, the manual has equally its artistic features. It represents in short, a specimen of the wealthy knowledge of one of the foremost pioneers of beekeeping in Great Britain—the distinguished educationist to whose prestige the **B.B.K.A.** owes much of its dignity.

THE PRODUCTION OF HONEY.[1]

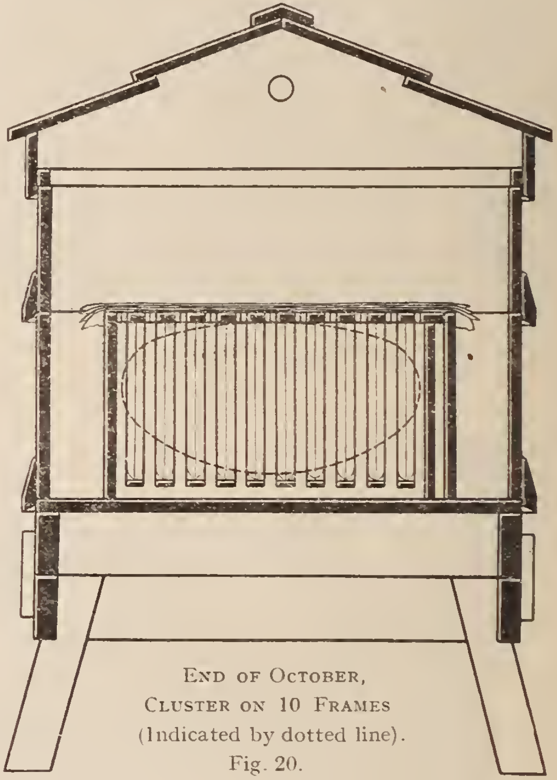
By JOSEPH TINSLEY, B.B.K.A.

This is another brochure from the pen of the well-known teacher whose research work on I.W.D. in Scotland has been a valuable addition to the work of his colleagues in other colleges.

Much useful elementary information within the compass of 56 pages is given in a lucid style, and with a bright touch of originality.

The booklet is a reminder of the splendid educational propaganda which is being conducted under the auspices of leading Scottish colleges and associations, who have taught us in a creditable manner how to respect them and to look to their labour with great hopes in the prospects of the future. The progressive section of Scottish beekeepers have so much kept abreast of modern apiculture that some of their leaders have gone to the extreme of despising the home Press, instead of constructively helping it by all possible means. No few of them have sown the seeds of their knowledge abroad, or discouraged other researchers who dissented from their views, but we note lately a healthy reaction which we heartily welcome. We have great pleasure, therefore, in reviewing **"The Production of Honey,"** which is distributed gratuitously.

From a psychological point of view we would have preferred seeing a nominal price charged for it. This practice has been adopted by the **Department of Agriculture and Technical Instruction for Ireland,** whose beautiful handbook, "Instruction in Beekeeping For The Use of Irish Beekeepers," which is however widely read in Great Britain, apart from their comprehensive scheme of Instruction in Horticulture and the Management of Bees, has given beekeepers in England much food for thought.



End of October,
Cluster on 10 Frames
(Indicated by dotted line).
Fig. 20.

Two illustrations from this bulletin which are worthy of reproduction are depicted here through the courtesy of Mr. Tinsley.

We fully endorse his observations regarding the globular shape of the cluster when viewed from the rear, as we have had ourselves facilities for watching this by means of our semi-observatory incubator hive illustrated in the June number of THE BEE WORLD. Furthermore, we would add that on each comb, the cluster exhibits evidently the same tendency. On cold days, visitors to **The Apis Club** have satisfied their knowledge on this point, by watching their behaviour in a single-combed observatory hive, in spite of the presence of a respectable number of bees. In our experience, bees adhere to the combs in cold weather, and when given a winter space over the combs, they will make use of it for clustering, especially if over-crowded. The lower border of the cluster will **not** descend below the combs, unless the bees are deprived of a **free** winter space above the combs, which can only be secured by employing a winter board, and not by means of the orthodox method of wooden strips, and unless the hive is comparatively very populous. When in bad need of food, they may **partly** cluster round candy placed over the combs; on the other hand, they may not, but the general tendency is to cluster over the combs. There are several lessons to be learnt from this; and they are sufficiently obvious to the free-thinking apiarist to need our repeated comment in this number.

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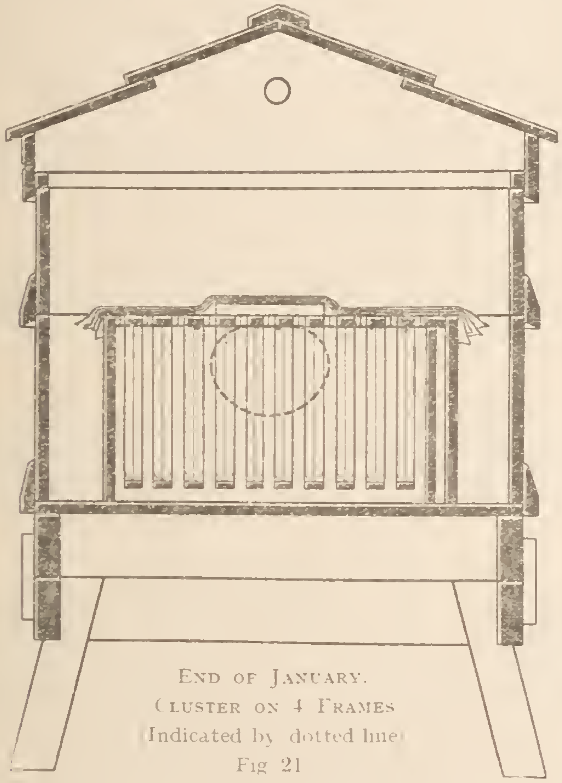
*) S. G. Madgwick, 26, Ivy lane, E. C. and "British Bee Journal" Office, 23 Bedford Street, Strand, London, W.C.2; 2 6 net.

(1) Bulletin No. 93, The West of Scotland Agricultural College, Kilmarnock.

So much for this point. Now observe Mr. Tinsley's confirmation of our view for which we have been ridiculed so much in a contemporary—namely that a strong stock in this Country capable of covering ten combs at the end of the season will generally cover no more than a quarter of this number or less at the end of winter. And why? Not because young autumn bees will so quickly dwindle, but simply because even a teacher in the position of Mr. Tinsley has failed to advise British apiarists to entirely revise their system of breeding and wintering. The remark may be even extended to beekeeping conditions in every cold country.



End of January.
Cluster on 4 Frames
(Indicated by dotted line)
Fig 21

In September when preparing for wintering the apiarist looks with pride on his strongest stock provided with ample stores, and little does he think that virtually they may be his weakest colony, as positively the chances of successful wintering, other conditions being equal, are fully dependent on the proportion of the young autumn members of the colony. What is the value then of an apparently strong stock as noted in October, when two-thirds of the members are in reality not destined to survive more than an additional few weeks, however much rest they may be fortunate to get during that period. The fanciful view that once old worker bees are given rest their lives may be profitably increased from six weeks to four months is clearly too fallacious to need comment. It is a different case with young bees who have not been over-worked or who have not "seen service" and are consequently in full possession of sound limbs and organs, their activities being limited to cleansing flights and healthy exercises. We cannot therefore endorse the popular view that such things as debilitated late-hatching bees are a reality. The tendency of even modern apiarists is unfortunately in the opposite direction. They look to the number of their bees, not to their age or quality. We are surprised for instance to find even Mr. Jarman remarking: "Very late hatched bees in the autumn may be a handicap to a stock, because, not having reached maturity, they are an added weakness, as we know the bees must be."[‡] In our opinion, which is based on experimental experience dearly bought and cannot therefore bear compromise, the period for an emerging worker to reach maturity is no more than a fortnight and often less. Workers emerging in October will find from older ones sufficient protection and will withstand prolonged confinement, until taking their first flight. Even in bad autumn weather in this Country bees get decent opportunities for cleansing flights. The seriousness of confinement with true winter clustering that lasts for many days at a time is generally felt towards Christmas, when a regular and an appreciable degree of frost is a feature of the weather. We need hardly say that by ending the breeding season early in October one will not miscalculate. "To stimulate so that a stock goes into winter quarters with a large proportion of bees which have not reached full maturity may be as much a handicap as a large proportion of bees past their prime" is a remark that hardly applies, since it has neither been practised in the past, nor is it ever likely to be a sequel to our incubating system of breeding, which is intended to remedy the present primitive state of autumn management, apart from its utility during the honey season, in which alone we believe that too many young bees are as bad as too many old ones.

It is much to be regretted that the researches of Rennie and White have only been good enough for literary discussions, in spite of the valuable practical lessons which they teach, and we confess our disappointment with the indifferent and orthodox manner in which Mr. Tinsley, being an active researcher on I.W.D. and allied disorders, handled this section of his subject, however elementary the work may have been considered.

Literary criticism is never intended for an ordinary writer, except under journalistic obligations. Mr. Tinsley's writings merit more criticism than we can afford to give here, and this must be treated as a token of respect and confidence in a conscientious leader.

(‡) Bee Craft September, 1919.

Autumn Leaves.
from bygone seasons
W.H.K.

THE FAULTS OF PUNICS.

In the hands of Mr. C. B. Bartlett, one of the leading commercial apiarists of Great Britain, the **Punic Bee**, in spite of a heavy winter mortality, has been a highly paying investment, inasmuch as he has been able through her employment to multiply his honey crop tenfold, and his unfed increase by thirty, in comparison with his previous returns from the **Native Bee**.

The introduction of **Apis Nigra** to this Country many years ago was due to the independent enterprise of John Hewitt, of Sheffield, who is considered by many as one of the best living authorities on queens. In the pages of THE BEE MASTER, which was issued and edited by Hewitt in 1897, a good deal of valuable information relative to this wonderful bee will be found. Copies of the historical periodical are no doubt a feature of all leading bee libraries.

To the simple novice, whose heartiest desire is a golden Italian, the **Tunisian Bee** will not of course appeal. She is after all, a negress! The prejudice to colour will again play its sinister role, even in rural economics and to the neglect of grateful industrious insects. But the practical beekeeper, who aims at honey production, will not think of colour for a moment, except as a method of differentiation. All prolific strains of bees such as the **Dutch**, the **Egyptian**, and the **Punic**, require intelligent and regular management, in order to divert the growing force of the colony to foraging, instead of swarming; and upon this management success or failure will depend. Any apiarist can keep without much trouble a mongrel non-prolific strain of bees, but not every one can profit by a prolific one, not even with pure Italians.

Were it not for a hundred and one duties, and for too many obstacles that might well have justified to any person the abandonment of the heavy task before us as its commencement as a hopeless impossibility, we would not have hesitated to add **Apis Nigra** to the strains in our research apiary, and to have closely studied her habits. But we hope to do so in the comming season, as we certainly consider our experimental apiary the poorer without this strain.

In his championship of the **Tunisian Bee,** Hewitt has been most liberal and co-operative for years. We do not however recollect seeing lately any announcement from him regarding the supply of queens; but it is possible that our interested readers may succeed in gaining his response should they apply to him at Bath Street Works, Bath Street, Sheffield. It is much to be regretted that a pioneer of his ability and a reputed possessor of one of the finest bee libraries in the World, prefers now to spend his bee life in seclusion. We do not remember for years seeing any contribution from him to the Bee Press.

Far from giving a one-sided picture of his favourite bees, Hewitt equally comments on the **Faults of Punics.** To the interrogation: "**Have** the wonderful Punics no faults? If they have, will you say what they are, as they do not appear to have any from what you have printed." The following reply appeared in THE BEE MASTER for July 15, 1897: "What a question to be sure, what Rosarian, for instance, regards the thorns on a good rose as faults, and when a man has a large number of good points, who stops to consider any weakness he may be prone to? It is when we cannot discover one good feature in him that we go for him respecting his failings. So it is with these punics, for whether I am blind or prejudiced, I cannot see any faults in them. The following are some peculiarities that may be regarded as such by some people.

They are very lavish in the use of propolis in badly-made hives, making a very noticeable difference in working the frames when bees are in the hive. In well-made hives, little or none will be found — but it is remarkable what a number of badly-made hives are sent out by firms who claim to turn the very best work out.

They are very prone to have fertile workers; this feature I used to regard as positive fault, but now I do not. They give no trouble, nor do they cause any annoyance, and though I think they would be better without this feature, I can't see that it makes any difference.

Queenless bees, if short of stores, will not preserve the drones, which is very annoying if you want to preserve such for late queen mating, and you think they will do, just because the books and Bee Papers say so.

If stocks are very rich in stores they will preserve the drones all winter, even with a young fertile queen. Many beekeepers will not regard this as a 'good' point in their favour, but then you see the bees themselves are more generous than their owners and don't begrudge the little honey the drones consume when they have plenty.

They are also very soon enraged when they have the swarming fever on, or when they are overheated with a hot sun shining on them.

The above are all the faults I can see; if anyone else can see any more, they can see more than I can; but then as I say I may be blind to them."

Yet the **Punic Bee** is hardly given a place of dignity in any popular bee manual!

The Bee World at a Glance.

NO DISEASE IN HOLLAND......

Mr. Richard Whyte, President, **Glasgow Beekeepers' Association,** has just returned to Scotland after a beekeeping inspection tour in Holland, including a visit to the apiaries of Hans Matthes the well-known Dutch breeder. He informs us that "the Dutchmen are expert bee men, but have very crude methods. I found no trace of any kind of disease, although I was keenly on the lookout for it all the time."

Of course the best time for detecting I.W.D. is during the cold season and early in the spring. Nevertheless, the message which Mr. Whyte sends to our readers is comforting.

BEE LEGISLATION IN BRITISH COLUMBIA.

The Canadian Horticulturist and Beekeeper reports that the Apiaries 1919 Act, which came into force in British Columbia on June 1st, is considered of drastic and far-reaching provisions and as a piece of legislation which is likely to promote the honey industry on modern lines.

Every person keeping bees is compelled to register his name and address, and pay a fee of 1 dollar 50 cents. for six hives or under, and 25 cents for each additional hive up to a total fee of 5 dollars.

To facilitate inspection, every beekeeper must keep his bees in a frame hive.

No bees may be moved from one farm to another until examined by a Government inspector and certified free from disease. So long as a district is known to contain foul brood, this provision remains operative.

Finally, a regulation both in the interests of producer and consumer the act requires that sellers of honey must label the container with a statement giving the net weight and stating that it is British Columbia honey.

THE CANADIAN HONEY CROP.

Reports from most provinces as published in the Canadian Press indicate as much a disappointing honey season there as we have experienced in this Country, with the exception, of course, of **early** districts and of **heather districts** in Scotland which have benefited by the favourable autumn weather.

THE DEMAND FOR AMERICAN HONEY.

A San Francisco letter to the **Western Honey Bee** announces: "the honey market is peculiarly unsettled. Buyers feel that the demand for expert could use all the season's surplus of extracted, but there is little money in Europe to buy honey with, and thus far, no adequate credits have been arranged by this Country."

HONOURING MR. JUDGE.

On the occasion of the Maidstone Annual Honey Show held this month, the **Kent Beekeepers' Association,** through their Vice-President, Sir John Cockburn, K.C.M.G. (who himself is an enthusiastic beekeeper) expressed their great appreciation of the services rendered by Mr. Judge in the remarkable development of the Association by presenting him with a gold watch and other gifts. In his recognition address Sir John remarked that Mr. Judge's re-stocking scheme for the County had been copied with certain modifications by the **British Beekeepers' Association** and by the **Food Production Department** of the Board of Agriculture and Fisheries. It would, therefore, be seen how valuable had been the work of the Association's hon. secretary.

800,000 BEEKEEPERS!

In the United States of America, the number of beekeepers will soon be a million. It is a credit to the educational propaganda of the American Government, of beekeeping Associations, of the Trade, and of the Bee Press. It is not lack of foul brood or Nosema disease. It is not the climate, which is by no means ideal in the Northern State, however much ideal it may be in the Southern. It is not a most exceptional richness in flora, and Great Britain is by no means truly poor. But it is a widespread enthusiasm for co-operation, an excellent organisation, and a remarkable spirit of good will on the part of all workers. One business firm may announce by way of publicity—which is a matter of taste—that bees take to their wax foundation before any other! But they do not believe in intrigues or quarrels. The Secretary of the humblest Association does not get for his services the abuse which is the grateful reward accorded to most of ours......The Trade does not forget that it has other than commercial responsibilities, and the Press does not aim at creating "book-novices," but at the constant uplifting of their standard. Our Press here is at once censored by its readers if it dares to tell them something new. From one point of view, beekeeping here may be considered a gamble. But if Mr. Bartlett can so well succeed in spite of the disadvantages of English weather and disease, others ought to be equally enterprising.

It is a matter of raising the standard of the members of the Profession hand in hand with enforcing the army of recruits. The British Bee Press has a big part to play, if the Trade, which will no doubt derive considerable benefits, will only adequately support it, and if the mass of present beekeepers will enthusiastically help it in its heavy task.

THE INEVITABLE REACTION.

Mr. Winsor W. Lantis, of Perry, Mich., U.S.A., writes to the **American Bee Journal**: "I would like to see a discussion of the different breeds of bees. I think that the **Carniolans** and **Caucasians** are the best honey gatherers. I have no use for the **Italians.** They may be all right for extracted honey." The Editor of the Journal remarks: "The above letter is a reminder that the Italians have had far more publicity than other races. Let us hear from the beekeepers who have given other races a fair trial."

This will also serve as a reminder to those here who believe that we have already full impartial knowledge and experience of, at least, most strains of hive bees, and also to those who base their judgment solely on book reading and heresay. The important factor of **special management** is only appreciated by an insignificant minority, and hardly enough. Although the same number of our contemporary contains an excellent account of Benton's travels and research, our able colleague, Mr. C. P. Dadant, was not the judge to say that "Benton introduced a good many races and these have been tried by men who knew well enough what qualities it was desirable to propagate."......This is just the spirit which has been hampering progressive research in Great Britain.

HAPPY JAPAN!

Mr. Yasuo of Hiratsuka, Japan, writes as follows to **Gleanings**: "I am sorry (or glad) to say, I and my fellows have no idea about foul brood.' There are not the both (American and European) foul brood in Japan. And, there is no I.O.W. disease." But how many other pests, we would ask. In Egypt, for instance, the hornets and ants are sufficient.

APPROPRIATIONS FOR BEEKEEPING WORK.

The **Am. B.J.** announces that several states in America have appropriated liberal sums for beekeeping work at the recent sessions of the legislature. Among the latest reports is that from the State of Connecticut, where the money available for bee inspection has been increased from 1,500 dollars to 4,000 dollars. A law was enacted requiring all beekeepers to register with the town clerk. If the provisions of this law are generally complied with, it will enable inspectors to locate all the bees in the territory where they are at work.

EXHIBITION OF ALUMINIUM COMBS.

Mr. Gilbert Barratt of 546, Ecclesall Road, Sheffield, who has recently imported from America a batch of aluminium combs, Langstroth size, but too late to put bees on them, kindly informs us that "if the Secretary of any reputable Association would care to receive one for the loan of four days, to exhibit to members, he will be pleased to send, on receipt of application."

Mr. Barratt is the hon. secretary of the **Sheffield Beekeepers' Society.**

RENTING BEES IN WASHINGTON.

We learn from the **Western Honey Bee** that "renting of bees has become an industry in the Yakima valley. Fruit men, particularly those who own valuable cherry orchards, are eager patrons of neighbours who possess a considerable number of stands of bees." As an illustration, "Mr. E. Bowles, who harvested 12,000 dollars worth of cherries from a six and one-half acre orchard this year, has completed negotiations with Dr. C. R. Ponting to rent 40 stands of bees from the Ponting apiary next spring at 5 dollars each. Mr. Bowles regards the bees as **indispensable** in distributing pollen among his cherry trees......The rental contract provides that the owner shall retain all honey manufactured by the bees, also that they shall be moved to the Bowles orchard when cherry trees start to blossom and shall be returned to the owner when the bloom has disappeared."

A WONDERFUL BEE MODEL.

The **Midlothian Beekeepers' Association** is credited with possessing a most detailed bee model, measuring 5 ft. long. It is capable of analysis for the purpose of anatomical and physiological study, and will show full details even of the vascular and nervous systems. From an educational point of view such a model is invaluable. It is the work of a French artist and has cost £200. The Association is to be congratulated on having such a valuable specimen of applied science and art.

HONEY PRICES AT MONTE CARLO.

Writing to his periodicals, The **Beekeepers' Gazette** and **Irish Bee Journal**, Mr. J. C. Bee Mason, the Associate Editor, and Bee Culture Advisor to the Ministry of Pensions, observes: A few notes respecting the price of honey here may be of interest. I purchased a small pot of honey in Monte Carlo. It had a parchment cover, extending nearly half way down the jar, doubtless to hide the fact that it was only three quarters full. Allowing for the thickness of the glass (nearly ¾ inch at the bottom), the jar contained about 3½ oz. of honey, for which I paid 1 franc 85 cents, or about 1s. 6d. I have explored the Riviera, from Cannes to the Italian frontier, expecting to find nothing but Italian bees; but nearly all I saw were indistinguishable from the English brown bee."

THE OVER-WORK FABLE.

In "The Arena" of this number an excellent letter from the pen of Mr. Robert Manley, a practical Oxfordshire apiarist of a long experience, will show how much truth lies in the fable of "overworking" our queens, when, on the authority of Bee Mason, a Dutch queen requires "a large brood nest, at least twenty standard frames, as compared with the ten usually allowed English bees," or at least, as in our own experience, she requires a ten-frame brood chamber, with a brood-hatching chamber working above it. Other prolific strains are not far behind in activity. Yet, surprisingly enough, the false alarm has spread from the British Bee Press to American Bee Publications. American apiarists ought to know better than this. Before an observant apiarist will be able to discover that his poor queen has been over-worked, he will find that another has taken her place, or that supersedence queen cells are a feature of his combs......

THE FUTURE OF BRITISH BEEKEEPING.

"There are indications that there is going to be one of the biggest booms in beekeeping ever known in this Country, and that it will develop into an important industry. The impetus is in a great measure due to the sugar shortage and to the prominence given to the subject by the Press during the last few years."[†]

EXPORT DISTRIBUTION OF AMERICAN HONEY for July, 1919.

Countries exported to	Amount in Pounds.
Belgium	335,470
Canada	1,008
China	651
Denmark	63,600
Finland	30,000
France	5,035
Italy	34,000
Japan	600
Netherlands	30,000
Norway	18,175
Panama	172
Philippine Islands	384
Sweden	39,830
United Kingdom	**111,135**
Other Countries	90

[†] The Sub-Editor of "Bee Publications" in The **Daily Express.**

INSTRUCTION FOR DISABLED SOLDIERS.‡

The American Government is making liberal provision for their disabled soldiers. Any who are interested in beekeeping will be provided with instruction at Government expense at one of the leading agricultural colleges. The soldier and his dependents will be provided for by the Government while he is taking training, thus relieving him of any anxiety on this point. Plans are also under way for some special intensive courses of practical beekeeping instruction for disabled soldiers in addition to the regular courses offered at the agricultural colleges.

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‡ The **Am. B.J.**

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HELPING THE DISABLED.

Mr. Alec Steven, Licentiate of the London Royal Academy of Music, and Hon. Bee Master to the "Princess Louise Scottish Hospital for the Limbless Sailors and Soldiers," at Erskine, is credited, during the last three years, with teaching beekeeping to over 400 men. The work is carried on gratuitously and all with a view to assisting disabled men who must change their vocation in life towards adding to their income.

DISTINGUISHED EXHIBITORS.

It is reported in **Bee Publications** that at the **Highland Agricultural Show,** held in Edinburgh in July, Messrs. Steele and Brodie's hives and appliances were awarded four 1st and one 2nd prizes. They write: "We fitted one of the Prize Hives with the 'J.G.D.' Ventilator, and we also had one on show in our own stand, and it proved a great success."

The first prize at the same Show for Pressed Heather Honey was won by Mr. Donald McDonald of Mill House, Argyle. Mr. John Moir, of Edinburgh, was awarded the first prize for products made with the aid of honey; and Mr. Thomas Pate for the best wax suitable for wholesale and manufacturing purposes. The first prize (confined to Scottish Exhibitors) for the best section comb honey was won by Mrs. Fletcher, of Pencitland.

At the **Bromley Show** held on the 6th of this month, the first prizes for section honey were won by Mrs. Culver of Swanley and Mr. A. Hook of St. Mary Cray. There were several successful candidates with extracted honey exhibitions. The exhibition of extracted honey, however, is not so much a difficult task as that of sections, because of the narrow limits of selection in the latter case, and owing to the much greater need for the display of an artistic taste. Mr. C. Gee was awarded the 1st prize for home-made hives exhibited at this Show, and Mr. H. Miller, of Walderslade, was a distinguished exhibitor of home-made appliances.

THE ROYAL DAIRY SHOW.

There are many reasons for anticipating a great success for this year's Royal Dairy Show which will be held at the Royal Agricultural Hall, London, from October 21st to 24th. Various horticultural, farming, and smallholders' journals are issuing special numbers for the occasion. Particulars may be obtained by applying to the Secretary of the **British Dairy Farmers' Association,** at 28, Russell Square, London, W.C 1.

THE HARVEST AT ABINGTON.

"As an illustration: 1919 —Bought 4 colonies; 1 queen = drone breeder; 1 hive queenless. Increase to 9. Sold one colony. Other eight colonies: each on 11 combs, up to the last week in August (date of writing, August 25th). One has 8 shallow combs + 3 section crates (latter full) + queen breeding in former. Another has 8 shallow combs.

A third colony has 1 crate of sections. Two have 2 crates. The other three have no supers. Not bad for a poor clover year!" —T.D.N.

BEES HOLD UP TRAFFIC.

Vexed by the August weather a "swarm" of bees held up the traffic in the goods yards of Messrs. Carter Paterson at Horne Lane, Acton, for nearly two hours.

The "swarm" which was a very large one, says the **Daily News,** gathered in four groups over the gateway at the entrance of the yard, and the loud buzzing of the bees attracted a large crowd of passers by.

The drivers of vans approaching the yard drew their vehicles up, afraid to cross the danger zone. Finally some allotment holders from the neighbourhood captured the bees, and carried the casts off to their hives.

WASPS IN BUNCHES.

According to **Lloyd's Sunday News,** great damage is being done by wasps to fruit at Ongar (Essex). They may be seen at evening time hanging in great bunches on the trees.

SWARMED BEES LAW.

Out of Sight Out of—Ownership.

The **Daily Mail** reports: James Balstone, Bath, claimed in the county court from Herbert Rumming, a neighbour, £9, the value of a swarm the latter was alleged to have seized, though the bees swarmed in a hedge on Balstone's land.

The judge said that it had been clear for hundreds of years under a law laid down by Emperor Justinian (in 529) that a swarm of bees belonged to a man as long as they were in his sight and could be easily pursued, otherwise they became the property of the first person who saw them. The swarm in question had not been in the owner's sight when it flew from the hive or when it was on the way to the hedge, 100 yards away.

The law to-day was just as it was hundreds of years ago.

The judge gave judgment for Rumming.

POOR HONEY HARVEST.

"The honey harvest of 1919 has been disappointing," says the Board of Agriculture. At the important periods the weather was either too dry or too wet.

In districts where fruit is grown, owing to the fact that the weather favoured honey secretion when the trees were in bloom, there has been a fair average return of 70lb. of honey per hive. But when the white clover came to flower contemporary with a drought there was little honey to be gathered.

The next great source of honey, the lime trees, failed because of almost continuous rain during the blossoming period.

A TRADITIONAL SIGN OF DISEASE.

"I have never seen a bee suffering from crawling and disjointed wings that did not give a dark brown evacuation, and generally a bee in normal health gives a very much lighter coloured evacuation ......"—F.P.S., Digbys.

[This sign is not trustworthy. What about the effect of dark coloured pollen, e.g., from poppies?—Ed., B. W.]

THE RECENT EMIGRANTS.

"The nucleus with the Egyptian queen is going on first rate." —H.H., Maidstone.

[This testimonial is typical of many which we have received and applies to "**hybrid**" **Egyptians.** A noted queen-breeder remarks in addition: "it has struck me since reading Claridges' notes that ..they would be very valuable for rearing queens by the 'case' method, described in Pelletts' book.' —Ed., B. W.]

THE STURGES FRAME.

"I have spent some time and thought recently about the standard frame......I have been using two brood boxes of standard size and found this satisfactory in summer, but troublesome in use and not practical for wintering. I have now designed a frame for my own use, a print of which I enclose. This frame is adapted for use with W.B.C. hives, and all standard hives with movable interiors.

You will see the depth is that given by one brood box + one super, and needs therefore no extra expense besides the actual frames. Naturally it is a compromise between your A frame and the Standard and has some advantages and some disadvantages of both. It is a large heavy frame and must be made strong and the foundation wired in. [This risk of the non-solidity of the comb can be easily overcome by utilising **metal foundation** or by having a complete **metal comb** of these dimensions, should there be sufficient demand for this particular size.—Ed., B.W.] It gives a very fair space for winter stores on each frame and will make a complete winter nest when 5 or 6 frames are used. Several people have asked my advice about large frames and I have given them dimensions of this."—Arthur M. Sturges, Hartford.

FAULTY I.W. RESEARCH ?

" Is it not possible that research work is being carried in the wrong direction ? It appears to me after reading various opinions in the **B.B.J.** and after studying treaties on the subject, that the seat of the mischief is in the brood nest, though I grant the germ must come from outside. The brood comb of the old skep was destroyed every 2 or 3 years, and you had no I.W.D. In the modern hive, the brood nest is allowed to remain four, five, and six, and I have heard of one case where it stood ten years "—R. Parrington, Dent.

[These views represent a popular belief to many ; yet we do **not** know of any evidence that the skep is at all immune to I.W.D. When malignant dysentery declared itself in this Country in an epidemic form years ago, the skep as much as any other hive could not resist it. If anything, a skep with infected bees is a menace, as much as it is an obstacle for treating the bees.

No doubt it is desirable for multiple reasons to destroy old wax combs, the only merit of which is solidity, but which otherwise are rich in dirty contracted cells and no doubt harbour nurseries of germs that are waiting for the earliest opportunity to play havoc with the brood and adult bees alike. The independent researches of Dr. Rennie and Dr. White disprove the susceptibility of the brood to I.W.D., and therefore will not support the views of our correspondent and those who think likewise. —Ed., B.W.]

DUTCH BEES FOR BRITAIN.

The popularity of the Dutch bee appears to be reviving after the inevitable reaction following so much disappointment in several Italian strains. We know, at least, that the demand for Dutch bees for the coming season, not only in Scotland but all over Great Britain, is such, that Mr. Richard Whyte, of Orme Lodge, Cumbernauld, Dumbartonshire, a leading champion of the Dutch Bee, and the Chairman of the Glasgow Beekeepers' Association, has been obliged to arrange for a large supply of skep stocks to be shipped over next April, both for the benefit of members of his Association and for others. Arrangements have also been made for two to three hundred to come over in October, to be wintered here and be ready for the Spring demand. There were so many beekeepers disappointed at the lateness of delivery, and in many instances not being able to obtain them at all, last season, that Mr. Whyte has taken time by the forelock now. We understand quite a lot of orders have been booked against delivery in April, 1920.

" SHELTERED BEES."

" I quite agree with you that Bartlett's scheme of 'sheltered' bees is not quite sound, and that a bee which has proved fairly resistant in an infected area would be preferable."—G.B., Sheffield.

THE SCARCITY OF SECTIONS.

There is a great shortage of sections on the British market, yet we have been able to gratify the desires of many enquirers through the medium of THE BEE WORLD MARKET without charging any commission from members of **The Apis Club**, although we were entitled to such a commission. In a few instances, announcements in our advertisements section was necessary, but we have hardly found this necessary as the connections of our Sale and Exchange Bureau multiplied. Goods were easily disposed of in a few days. As we go to Press the following announcement reaches us, but on account of the comparative scarcity of sections during this season which has deceived and disappointed the shrewdest judges, we prefer now to give more than a few of our readers a chance to reply to the following notice by Mr. J. A. Wagner, of Ballinascarthy, Co. Cork : " About 400 splendid section honey ; waxed wrappers ; what offers ?"

FOUL BROOD IN IRELAND.

" We have no I.W.D. here, but F.B. is very prevalent, though we have instruction in every County here. It is just so much money wasted. They do nothing to stamp it out. Later I may send you a report on beekeeping in Ireland. We have got neither candy nor sugar for Autumn feeding. Bees will have to live or die on what they have gathered."—S. Crawford, Castlederg, Co. Tyrone.

A MATTER OF POSITION.

The Western Honey Bee of Los Angeles, California, U.S.A., a highly progressive American bee magazine, is good enough to remark : " We have received Vol. I, No. 1, of THE BEE WORLD, published somewhere in England. It is beyond criticism as an apicultural review, save in one respect—there is not a line in it to indicate where it is published or where one should send money for subscriptions." Yet the manager of the same periodical has managed to discover that it is published by **The Apis Club**, at Benson, Oxon, England, and has kindly favoured us with an exchange copy......

We are afraid the scope of our magazine is so wide that, however much we may economise in superfluous notices, and by the use of small type, and by condensing and sifting in our limited time the piles of literature available, we are no better off than before in possessing no more than a primitive bee magazine, the contents of which are hardly fitting for its title. Space therefore is very valuable to us at present, and as a matter of journalistic taste and practice, we cannot afford, for the time being, many displayed notices.

If international bee culture—as a piece of an educational instrument for creating concord and effective understanding between one people and the other—has any place of foremost championship, this should be in Great Britain and America. It is indeed high time that " nations came to know each other far more intimately than they had done in the past." Every form of international education helps towards this end. And we hope therefore that all our esteemed American contemporaries,apart from the Bee Press in other Countries, will strengthen our hands in performing our difficult task, both morally and otherwise. Much as **The Apis Club** has been the means of bringing to the notice of many members the products of American apiaries and factories, for which there is a growing demand, apart from those of other Countries, not a single trade advertisement from America has so far been received by this organ, contrary to the traditions of American firms and in spite of the appreciable volume of business transacted. May our excessive failures—from inadequate notices to inadequate literature—be understood and forgiven. It is a question of support and space. It is a matter of position.

TO BEE OR NOT TO BEE ?

(From THE DAILY HERALD.)

(It has been discovered that a bee-sting is an almost infallible test as to whether a person is likely to succumb under an anæsthetic. Bee-stings affect the glands of persons suffering from a certain form of nervous weakness.)

I requested my Dentist to pull out a tooth.
The man was entirely impervious to ruth.
" Just open your mouth," said the case-hardened ass.
I answered him firmly, " I'm going to take gas."
" Got a doctor's certificate ?" next he inquired.
But I couldn't produce the credentials desired.
" Then come to the hives," he commanded, " with me,
And we'll try the infallible test of the bee."

I went to the hives in a good deal of doubt,
For I wasn't quite sure what the test was about.
At a hive which appeared to contain a Jazz band,
My Dentist said carelessly, " Put in your hand!"

* * * *

As it seems I have glands and a strong nervous weakness,
Ungassed I confronted the forceps with meekness.
But the next time I'm ordered the Bee-Test to pass,
Before they apply it I'm going to take gas.

TOMFOOL.

WHELER'S JOURNEYS INTO GREECE.

We are reminded that this precious work may well be considered a discovery by Mr. Hewitt, no other apiarist in the past having mentioned it or quoted from it, at least, correctly. He has, we understand, seven copies of the work, and as they were issued at ten pounds, they are considered rather precious.

THE MACDONALD METAL COMB.

" I have received a letter from The Aluminium Honeycomb Co., Los Angeles, U.S.A., to whom I had written to try and get British sizes From the strips of metal which they enclosed, I can easily appreciate the defects this type of comb possesses; whilst at the same time, as an engineer, I must admire the simplicity and ingenuity of the method employed."—T. I. Robinson, Crayford, Kent.

THE SUPPLY OF EGYPTIAN BEES.

After noting the many encouraging testimonials that are accumulating regarding hybrid Egyptian bees, and especially relative to the hybrid Egyptian Natives, we have no hesitation now in encouraging facilities for a more extended trial.

The breeding season in Egypt starts before many weeks pass, and all orders should be given without delay. They must not be delayed later than November.

All orders should be addressed to the Secretary of **The Apis Club** in a **sealed** envelope and marked " Egyptian Bees." The applications will then be forwarded **as received** to a specialist queen breeder in Egypt, who is also a member of the **Club**, and members will be put in direct communication with him. If their orders can be executed, they are expected, on being informed, to pay the price in advance. No commission is charged by the **Club**, a free co-operative service for the benefit of British apiarists generally being intended.

	Date of despatch		Price of one Queen
Prices of Fertile Queens	March 15th	..	10s.
	April 15th	..	9s.
	May 1st	..	8s. 6d. post free

Should a guarantee of safe delivery be required, an additional fee of one shilling per queen is payable.

A limited number of **pure Egyptian nuclei**, each on six Egyptian standard combs (top bar 22 cms., side bars 17½ cms., and bottom bar 18½ cms.) can be procured as follows:

Date of Despatch		Price
March 15th	..	£3 3 0
April 15th	..	£2 12 6
May 1st	..	£2 2 0

These prices include travelling boxes and carriage.

We have ourselves received one such nucleus during cold unfavourable weather, and although many bees died in transit, the queen was amongst the survivors.

As we do not take any part in these business transactions,other than merely introducing one party to the other, however much confidence we may have in both, we take therefore no business responsibility. A last reminder: send your order **at once.**

A NOTABLE LEAD.

It will no doubt come as a gratifying surprise to many British apiarists everywhere to learn that through the exceptional bee enthusiasm and activity of Mr. A. H. E. Wood, of Glassel, Aberdeenshire, the possessor of **the** model apiary of Scotland (a description of which by Mr. D. M. MacDonald in **The British Bee Journal** has been widely reviewed both at home and abroad, especially by our esteemed contemporary **L'Apicoltore** of Milan, the oldest bee magazine in Italy). The membership of the County Association which, at one time, was no more than 80, is now over 1500, and is rapidly on the increase.

Mr. Wood is known by his friends to attribute the striking success of the Association entirely to the loyal co-operation of his colleagues, although undoubtedly the driving and organising force and the patronising support have been principally his.

As one of the exceptional genuine leaders who have strived hard to regenerate British beekeeping on a respectable standard, with much to lose and nothing to gain other than the satisfaction of the bee lover and reformer, who nevertheless avoids all forms of personal publicity, his notable example is most praiseworthy.

IMPORTATION OF AMERICAN HIVES.

We learn that the Service Company Ltd., of High Holborn, London, have imported a good number of hives and a large quantity of wax foundation from the A. I. Root Company of Medina, Ohio, U.S.A. Those who object to such a free trade should remember the quality of goods (which amount to no more than fire wood) that have lately appeared on the British market. They should also remember the apathy of many manufacturers towards adequately placing their goods before the British public, the insufficient output, and the indifference to the creation of better hives and appliances than those we possess at present. In spite of our readiness, free of any cost, to review and criticise modern useful appliances that may be introduced from time to time, both for the benefit of our readers and for stimulating better production, our repeated request, with few exceptions, has had so far very little response. Comment is superfluous......

THE B.F.C.A.

The British Food Culture Syndicate, we are pleased to learn, have now completed their re-organisation scheme for establishing a broader and a better organised B.F.C.A. Mr. Charles Howes, one of the leading members of the Organising Committee, writes: " This Committee soon found that if true co-operation in its best form was to be developed into the interests of the members and those likely to become such, it would be necessary that we should be able to manufacture as far as possible our own appliances, etc., and certain negotiations were entered upon with this end in view. This has been tedious work and required a great amount of patience and diplomatic skill. However, 'it is a long lane which has no turning,' and it is with extreme pleasure that I am now able to report that a good factory has been offered to us where all kinds of appliances can be manufactured......The new British Food Culture Association....with a nominal capital of £30,000 in £1 shares has been registered and will take over the business at Holborn Viaduct and acquire as soon as funds permit the factory and business above referred to.

A strong Directorate is being formed, and a capable manager will soon be appointed. And it is now up to the Bee, Poultry, and other Live Stockers, besides Gardeners, Smallholders, etc., to rally round the Association and make it the national asset it is intended to be."

Members of the old Association, we understand, will receive exchange shares of equal value in the new and greater organisation.

It is gratifying also to learn that as soon as adequate advertising support will be secured, **Co-operative Food Culture,** the official organ of the Association, which had a respectable circulation, will make a re-appearance.

The advertising question, we fear, is no small obstacle, at least so far as the Bee Teade is concerned. The traditions of this section of the British Industry are almost a contrast with those of other and greater sections, which are part and parcel of the great national life of Britain.

Instead of the Bee Trade here supporting to the **maximum** of degree their Press, so that a greater development of the literature may be achieved, (with the consequent creation of a greater and a better equipped army of modern beekeepers), they rival, with some exceptions,in intrigues, in destructive discontent, or at best in hopeless apathy, and permitting outsiders to take advantage of their indifference and to gradually capture from them the potentialities of the Trade. Take as an illustration the case of respectable American business firms of the type of Root, Dadant, Muth, Woodman, Lewis, Mondeng, Clayton and others, who, in spite of their extensive trade, cannot afford to drop advertising, and they equally support **all** the American bee magazines great and small, knowing perfectly well that, by doing so, they do not directly help themselves, but that they do **indirectly** obtain an immeasurable gain, by increasing the circulation of the literature which they support, and thus augmenting the force of beekeepers who are sure then not to miss their notices. The same principle is well understood by all types of business houses in this Country. Is the Bee Trade an exception? Does it so much lack a few pioneers?

A FRAME OF RE-INFORCED CONCRETE !

We have refrained from commenting on the Prize Articles published in this Number. And although we give otherwise much editorial comment, we most reluctantly do so at the pressing request of many readers. We believe our space would be more profitably used by others, since the magazine is far from being intended to express merely our views. And however contradictory some contributions may be, no little good will result from free and original discussions. It is a better and a healthier course than the spoon-feeding of orthodox literature, so much adored by many people.

When a magazine claims to champion modern beekeeping, and to stimulate research, and to give everyone his credit, its pages should be impartially open (yet without wastefulness or lack of selection) to capable free thinkers, otherwise we shall keep tracing the same circle of so-called progress.

Yet our genuine belief in these principles does not help us to digest the prophecy of Mr. F. P. Smith that, possibly, the frame of the future "may be formed and moulded of re-inforced concrete." We hope we shall not live long enough to see such an invention in popular use......

The Arena: Letters to The Editor.

INTRODUCING ITALIAN QUEENS.

To the Editor of The Bee World.

DEAR SIR,—As I have heard of several failures in introducing Italian queens, I will just give my plan. I have during the past 5 years introduced some each year and so far have never lost one. I always use a round pipe cover cage for queens that have come by post. I make my cages 2 inches in diameter, with a $\frac{3}{4}$ inch ring of tin and a dome shaped top of wire cloth, they will last for years, and if the comb you want to put them on is old and tough just a screw round will send the tin base right home to the midrib of the comb. When your queen comes, go to the hive you are going to requeen, catch the queen and dispose of her as you may wish; then take your Italian queen in her mailing cage to a table in front of a closed window, take the wire cloth off and let the bees run out; put your pipe cover cage over the queen, and when she is up on the wire cloth slip a card under the cage, and you can then take her to the hive she is to be caged in. Take out one of the brood combs that has unsealed honey along the upper part, brush the bees off on to their alighting board, rest the comb on anything handy, lift the cage with the Italian queen, card and all on to the comb over some cells of unsealed honey, slip the card away when the queen is on the wire cloth, not when she is on the card, or her legs might be hurt. Then give the cage a screw round to send the tin rim into the comb to the midrib, watch your queen while doing so, or she may be hurt. Return the comb with the cage on, to its place in the hive and cover up. Forty-eight hours afterwards I go to the hive very quietly and have a look. If the bees are crowded thick on the cage, I let her alone another day as the bees would only ball her if they could. If the bees are not crowded on the cage but only about as at other parts of the hive, I lift the frame out and raise the cage quietly and let the queen walk out. Then watch results, if the bees feed and lick her all is well, but if they catch hold of her wings or legs or hustle her about, cage her alone again at once and wait another day, for they would ball her.

With one vicious lot I had to recage the queen three times and then succeeded all right.

It is well to remember that a queen that has come from Italy has not been laying for some time, so is light and thin and will fly off like a virgin if the bees attack her. If she does so, leave the hive open with the comb exposed, keep watch and cage her when she returns. The first one I introduced this year flew off at once when a worker attacked her, she soon came back, was recaged, and the next day the bees took her well, and she soon had a hive full of brood.

I think most failures happen through people trying to use the mailing cage for introducing, and chiefly through leaving the attendant bees with the queen. I would never risk that, for if the bees start killing them there is not much hope for the queen.

Yours faithfully,
"Holmleigh," H. WATTS.
Bearsted, Maidstone, Kent.

[This method of indirect queen introduction has an advantage over that described in our last issue, namely that the queen is never likely to be starved if left unreleased for a comparatively long time—as long as nearly 4 weeks in an experimental case in our apiary—whereas the bees may neglect feeding her in the other case under unfavourable conditions. This misfortune is only possible, however, through negligence on the part of the apiarist. **A new queen may be thus imprisoned and accustomed to the odour of the hive whilst the old queen is left working till the last moment.**

For a busy beekeeper a quick method of securing the queen is to immerse the cage in cold water before opening, and thus disable the queen, as in a few instances she is amongst the first to fly out of the cage when opened.

Without watching to see whether the queen is likely to be balled or welcomed, an indication may be gained of her likely fate by noticing whether the bees are "willing" for manipulation or otherwise. Bees in bad temper, from whatever reason, are not in the best mood to accept a new queen, unless highly deceived. As an illustration, the direct introduction of a new queen previously coated with honey belonging to the same colony **simultaneously** with the removal of the old queen, has repeatedly succeeded in our hands at all times (prior to the "robbing season") when care was taken to introduce a queen of equal or better standard than the one dethroned.

It is a good advice to watch the attention given by the bees to the cage, as Mr. Watts suggests.

When it is finally decided to release the queen, a simple method, which we have practised with success, is to bore a hole from the back of the comb with a screw driver or the like, and let the queen make her way out in time. The cage may be removed at a later stage.—Ed. B.W.]

WINTERING ON LARGE COMBS IN DOUBLE STOREYS

To the Editor of The Bee World.

DEAR SIR,—As an experiment I am trying a colony on eleven 18 × 12 Dadant frames, with an upper storey of eleven standard frames. All this season's gathering is being left with them—perhaps about 80 lbs. The Italian queen heading this stock has broken down completely, and I want a real good one to replace her. No doubt a first grade queen will be able to fill an extra large brood chamber.

Yours faithfully,
Rigg, Gretna, Carlisle. J. M. ELLIS.

[So far as employing large combs for wintering is concerned, our correspondent is acting wisely, for reasons which we have already given in this and other Bee Periodicals. And as regards wintering in two storeys we have nothing to add to the remarks that appeared in our August number except that it is vital to be sure that the bees actually **need** such additional room, and that it is in proportion to their numbers; otherwise what is the advantage of an excessive room? Further, we do not believe in the conclusive evidence of any single experiment, and especially of one without a "control."—Ed., B.W.]

THE BEST BEE PLANT.

To the Editor of The Bee World.

DEAR SIR,—I have pleasure in sending you herewith seedlings of Phacelia Tonacetifolia, which is the best plant I know of. Try it.

Yours faithfully,
10, Edinburgh Road, JAMES STRANG.
Bathgate.

[We endorse Mr. Strang's remark regarding the excellence of all species of Phacelia as bee plants. P.T. grows wildly in a section of our apiary, and is much frequented by bees; but it is difficult to say that is **the best bee plant.**—Ed., B.W.]

OUR WONDERFUL ARCHITECTS.

To the Editor of The Bee World.

DEAR SIR,—The Egyptian virgin which you have presented me with has successfully mated and is laying well.

It seems to me and to other Bee men that the British bees under the Egyptian queen are building smaller cells than usual. If such be really the case, it is very wonderful. But I will try to have measurements taken and verified, meantime the interest remains.

T. DUNCAN NEWBIGGING.
Abington, Lanarkshire.

[We have not been able to verify Dr. Newbigging's preliminary observations on examining our experimental nuclei which are headed by recently mated Egyptian queens. His further observations will be interesting.—Ed., B.W.]

APIS AND FLORA.

To the Editor of The Bee World.

DEAR SIR,—May we have some notes on the nectar bearing qualities of English plants and shrubs. I have masses of Veronica, Buddled gorse, Broom, Cotoneaster, Syringa, Escalonia, Arbutus, Laurestina, etc. What are the nectar values of these? Does buckwheat yield nectar in Britain? What nectar yielding plants will spread most rapidly on waste land?

Yours faithfully,
E. O'BRIEN, Lt.-Col., D.S.O.

Mount Eagle,
Killiney, Co. Dublin.

[We have been fortunate in securing the co-operation of our friend, A. F. Harwood, the well-known horticultural writer. Our correspondent's letter was handed to him, and he kindly replies as follows: "Your editor has done me the honour of inviting me to contribute articles on the flowers useful to bees. In that appearing on another page, 'Apis and Flora,' you will see notes on the shrubs you mention. The questions referring to buckwheat and plants for water lands will be dealt with in subsequent articles." Horticulture is inseparable from apiculture. The progressive beekeeper cannot afford therefore to neglect the study of the former without prejudicing the successful development of the latter. We feel confident Mr. Harwood's articles will greatly enrich our periodical.—Ed., B.W.]

THE VIRGINITY OF UNFLIGHTED QUEENS.

To the Editor of The Bee World.

DEAR SIR,—The credit of the discovery that unflighted virgins may be kept indefinitely belongs to Hewitt, the champion of Punics. He has many times sent Punic virgins almost all over the world, including some to Dr. Miller, which duly mated, and are mentioned in his book and also in **The American Bee Journal**. He is a most wonderful man on queens. Amongst his achievements, I may mention that he can produce up to 400 virgins in one hive, at a time, on natural cells, and these virgins running about the hive, at liberty, without any being killed. I would not believe it until I saw it with my own eyes, when he lifted frame after frame with scores of virgins on each.

May I add to my remarks in my last letter, that I do not agree with you in furnishing mating nuclei with drones? I have always found that virgin queens appear to have the instinct to get away as quickly as possible from their own hives, and this is probably a provision of nature to prevent **in-breeding**, and in any case, the manner of mating ensures the race to the swiftest, and strongest, irrespective of the hive from which the drone issued, and, in my opinion, the very fact of the drone having the same hive scent, would cause the queen to avoid him, so strong is the desire for cross mating. I have had more success in pure mating by breeding my drones in a separate apiary, situated some distance away, and in the line of flight, along a valley, along which the queens usually travel.

Yours faithfully,
GILBERT BARRATT

546, Ecclesall Road,
Sheffield.

[We are not disputing Hewitt's discovery as we have not his experience. But we consider we are on very solid ground when we observe that although we have more than sufficient numbers of drones for mating in our large breeding apiary, it has happened on more than one occasion with queens that appear to be normal to turn out as drone layers when no attempt is made to control their mating, and especially after prolonged confinement in unfavourable weather. No weather which is good enough for the flight of virgins would be considered unfavourable for the flight of drones.

As for **in-breeding** and **controlled mating**, we would refer our correspondent to the editorial remarks both in the last and current numbers.—Ed., B.W.]

ISLE OF WIGHT DISEASE.

To the Editor of The Bee World.

DEAR SIR,—In the Counties of Inverness, Banff and Elgin where I spent my holidays visiting beekeepers, I found that a good many stocks of bees have succumbed to "Isle of Wight" disease. So far as I know, however, it has never carried off a whole apiary of more than 1 or 2 stocks, nor has it swept rapidly from one apiary to another; whereas a few years ago it often destroyed every colony a man had, and even quite cleared out whole districts.

The disease is evidently losing some of its dreaded virulence, whether by some cyclical change in the disease itself or by bees becoming more resistant. Now, this latter cause would operate chiefly where the disease has passed and repassed, but as it is clearly much less deadly in districts where it reaches for the first time, we can hope there is some sort of attenuation of the virus of this plague.

The etiology of the disease remains undiscovered as yet. No organism has been found as its cause, only it is certain that it is not **Nosema Apis**. The Scottish investigators of the disease, the bee lecturers at our 3 agricultural Colleges, Dr. Rennie (of Aberdeen) and others, assure us that this very elusive infection is carried by neither honey, frames, nor infected hives, nor by bees dead of the disease, nor even by the living brood which was reared and fed by stocks which have succumbed, but apparently only by direct contact with diseased and dying bees. Individual bees once attacked, never recover. These facts are the greatest importance, if fully substantiated, and prove that Mr. Bartlett's most drastic and thorough-going scheme is quite unnecessary. Isle of Wight is perfectly unlike Foul Brood, the spores of which are so very difficult to kill: and the diseases are to be fought in different ways.

I suggest that so soon as a hive is known to have the disease, the bees be chloroformed if there be brood, that the latter taken out and given to a healthy hive, and all the rest be killed off. Dr. Rennie, of Aberdeen, is anxious for queens from infected hives and is willing at times to pay for them. There is certainly no harm in disinfecting the hive and frames, but it is not essential. Many beekeepers know of stray swarms that have taken to hives where the dead lay thickly from "Isle of Wight" disease. Yet these latter have been cleared out, and the swarm has prospered and remained uninfected. Above all, prevent robbing from colonies where there are living bees.

Hoping that the cause may soon be discovered.

Yours faithfully,
JOHN W. MOIR,
Hon. Treas., Scottish Beekeepers' Association.

64, Polwarth Terrace,
Edinburgh.

[We have already made preliminary references to the researches of Dr. Rennie and also of Dr. White. It is quite possible that the virulence of the disease is now beginning to be on the decline through the various prophylactic measures that have been in operation both by individual apiarists and bee-keeping societies. **Nosema Disease** cannot be so easily dismissed, although its present degree of virulence may be hopefully considered. Even in America, where excellent attention is given to breeding, the disease has a footing, but in a mild form. To the eminent bacteriologist and entomologist, Dr. G. F. White, of Washington, belongs the credit of solving with an appreciable measure of success the mysteries of this disease in the New World. There is not sufficient evidence that **Nosema Apis** is not responsible for a form of malignant dysentery, but there is every indication that a disease not unlike it in gross symptoms may be due to other causes. There is a possibility of a **filter-passer** as a cause of a certain type of infection. Where the disease is non-infectious it may be of **metabolic origin.**

It would be instructive to quote—on this occasion from **The American Bee Journal**—the general conclusions of Dr. White. He summarises the results of his research as follows: "Nosema disease is no new disease, but one which has been among bees for a very long time. The disease may cause the death of colonies or may only weaken them. Like sacbrood, it is very widely distributed. It does not produce the heavy losses, in infected apiaries, which are common for the foulbroods. In this respect, also, the disorder is like sacbrood. The losses resulting from Nosema disease are greater than those from sacbrood. It is, therefore, a disease of considerable economic importance. It is caused by a parasite (**Nosema Apis**) which attacks the stomach of the adult bee. Workers, queens, and drones are susceptible to infection, the brood is not. Outside the living bee, the germ dies in a rather brief period, and is quite susceptible to heat and other disinfectants. Neither drones, queens, simple contact with infected bees, drifting bees, hives, bee supplies in general, nor flowers, are to be feared as fruitful sources of infection in the disease. Diseased colonies possess a strong tendency to recover from the infection, without attention from the apiarist. There is much yet to be learnt about Nosema disease. The facts which have already been determined, however, are sufficient to make it possible for the practical beekeeper to devise methods, for the treatment of the disease, which will be both efficient and economical."

It remains to be seen what limits of immunity from the disease have we already reached and are approaching, and in what degree the above conclusions of the American scientist are likely to apply in future to British conditions. With the impetus given to selective breeding, we should entertain hopes. At present we regret to say there are still many cases of fatal I.W. disease which are suspiciously infectious; and we shall not commit a blunder in being too cautious. It is too early yet to judge, however, the degree of final success which the Government Re-Stocking Scheme will attain in fighting I.W.D. in Great Britain.

We need hardly say in concluding these comments that all progressive British apiarists should give Dr. Rennie their whole-hearted support in conducting his much needed investigations.—Ed., B.W.]

OVER-WORK AND DISEASE.

To the Editor of The Bee World.

DEAR SIR,—I should like to make one or two remarks on your reply to Mr. J. M. Ellis on page 53 of the August number of THE BEE WORLD.

Granted that the queen cannot be over-worked to an extent harmful to herself. Still, you say over-work of workers **does** exist. I gather you do not mean that these over-worked or worn out workers are liable to disease, but that as they die out early, they leave a stock weak and thus more liable to be swept away in winter. This need not be by disease, however. I have always understood this and have no hesitation in stating that the remedy is to **re-queen in July.** Not because the old queen has physically deteriorated, as was implied some weeks ago by a correspondent in the **B.B.J.**, but because it will be found that a queen that has been laying at full pressure throughout the spring and summer will always stop breeding early in the autumn and often directly after honey ceases to be gathered. This is not because of any physical deterioration, that is permanent at any rate, because a queen that stops laying early usually does very well next season, but because a rest becomes desirable after a long spell of work.

A young queen hatched in June and introduced in July will usually lay right on to Oct., or even later without any feeding whatever and thus will produce a vigorous young population to carry the stock safely through the winter. Herein lies the remedy for stocks failing to winter through the bees working too late.

Commenting on the above it may be pointed out that though a queen cannot be injured by heavy breeding when encouraged to lay by merely having ample room provided, which is wrongly termed "forcing the queen" by some bee men, I feel that it is not at all certain that harm may not be done by stimulative feeding in autumn in the case of queens that have ceased to lay of their own accord.

A young queen, I mean a queen only a month or two old, will not require stimulating in autumn, and I believe that harm may be done by stimulating a queen that has begun her winter's rest in the natural way.

The moral is **requeen in July.**

Perhaps you will let me know where I am wrong above. Not making any pretence of scientific knowledge, I shall be glad of any comments you care to make.

Yours faithfully,
Brightwell, Wallingford. R. B. MANLEY.

[We agree with the introductory remarks of Mr. Manley. Our comments on Mr. Ellis's letter do not suggest other than what he understood. The over-worked foragers, whether comparatively young or old in age, and whether finally succumbing to infection or otherwise are bound **not** to survive the winter. It follows therefore that a strong colony of over-worked bees; with a queen which has early ceased to lay, through the faulty management of the beekeeper or otherwise, is generally doomed to extinction in a severe winter, with or without signs of dysentery. It is then described as a case of I.W.D.; and should it happen that **Nosema Apis** is not detected—(it may be met with amongst healthy bees and would only indicate resistance to the infection)—a discovery is claimed that this parasite has no connection with the disease. This does not mean that non-infectious diseases of the Honey Bee, which more or less resemble I.W.D. proper in certain leading features, do not exist. It only suggests one of the fallacies that are operating in the popular classification of bee mortalities.

The function of ovipositing when over-done is likely to be exhaustive and productive of debility. It is a physiological law which equally applies to other functions. But we are not aware that this is a general occurrence. The queen and workers alike do not so much respond to the apiarist's persuasion in regard to breeding—at least with the orthodox method of management—as to foraging when tricked to do so through a constant need of food for storage, and through other stimuli. Nevertheless, it is an actual accomplishment to maintain a queen from the spring more or less actively breeding till October. We comment on this editorially.

Requeening in the Summer should certainly replace—at least in Great Britain—requeening in the autumn, should the old queen be actually failing, otherwise stimulative breeding on the lines suggested editorially will generally succeed in raising a healthy autumn progeny of bees which are naturally destined to live till the Spring.

In a large apiary with a plentiful supply of young queens, one can afford to test and select, to exchange, and to destroy undesirable queens. The smallholder would be ill-advised to destroy the mother of the colony unless he is **perfectly sure** that the new queen which he has secured is of a reputable standard above his own, otherwise the disappointment will mean more than a double loss to him.

When good winter protection and food, are assured we believe that the **winter mortalities** may be appreciably diminished by securing and not by merely talking about **plenty of Autumn bees.** Here lies one of the three great secrets of successful wintering. There is more than one road for reaching this goal.—Ed., B.W.]

INTRODUCING FOREIGN QUEENS TO APIS FASCIATA

To the Editor of The Bee World.

DEAR SIR,—After repeated failures I have at last been successful in importing four queens alive from Italy, mainly due to the courtesy of Sig. Piana, of Bologna, who has done everything in his power to get the bees through alive, though he never guaranteed safe delivery.

On receipt of the queens I proceeded to introduce them to the Native bees on August the 19th, at the beginning of the Hornet season.

Before quoting my experience I should like to draw your attention to one fact: 'queens introduced during the Hornet season are invariably killed, the bees mistaking them for Hornets.' I, therefore introduced them to hatching brood only.

After a look round, I managed to find 12 frames of hatching and closed brood, which I divided into three lots, each lot being given a queen and her attendants. Each lot was then placed over a strong colony separated by a wire screen. The fourth queen was unfortunately killed by ants through carelessness. The entrance was in each case closed.

Five days later the bees were placed on a new stand and allowed an opening, though none would be going out for a week or so.

Twelve days after the introduction an inspection was made, and the three queens were found in good order, but not laying. One of the queens became nervous and flew off only to come back again almost at once.

Three days later another visit was made: the first queen was found dying with three legs and one wing missing, the second being badly 'balled' and also maimed, but the third queen was doing well. The second queen was caged and her bees heavily fed, and the bees of the third were shifted and also fed. The shifting was done so as to get rid of the older bees for fear of their balling her also. No further examination was made until to-day, 13th Sept., after having released the second queen three days later.

The second queen was found killed, but the third seemed well, though not laying.

I have great hopes that I shall carry the third queen through till December, when our breeding season starts.

From the foregoing notes it is clear that it is much safer to import nuclei than to introduce queens of foreign breed to Egyptian bees.

Yours faithfully,
Cairo. H. HELBAWY.

[With all respect to the ability of our esteemed correspondent, we fail to see why there should be any difficulty in introducing a foreign queen to Apis Fasciata when rapidly emerging Egyptian bees are made use of. It will suffice to start with two combs of advanced **capped** brood and one of food, with **no** adhering bees other than those emerging. Place in an **incubating chamber** over the brood chamber, after separating with a wire cloth or perforated zinc screen, as employed by our correspondent. Inspect in a week or so, using a warm spray of water as a disabler (as there is a risk of the queen flying through nervousness) in case you are satisfied that they are in a fit condition for transferring, otherwise the bees may be kept in a longer confinement for a fortnight or so, until more emerging bees enforce their numbers.

The conditions which Mr. Helbawy narrates are sufficient to make the final establishment of a queen a hard-won achievement.

During the "robbing season," even in England, non-successful queen introduction is not rare. The queen, through her nervousness, is often the victim of her attendant's panic when excessively disturbed, such as through very early spring-manipulation or very late autumn one. **Robbing** will explain the mysterious disappearance of some queens in the autumn, and we do not include bad cases of robbing where the robbers are responsible for the destruction of the alien queen.—Ed., B.W.]

ANNOTATIONS.

To the Editor of The Bee World.

DEAR SIR,—Will you allow me to congratulate you on your publication? I have always felt that a periodical was sadly needed to report the results of serious experiments by trained observers and not to waste its space by answering the questions of beginners that are too indolent to refer to the guide-books.

Perhaps you will permit me to take this opportunity, also, of making a few comments on some notes in your back numbers.

First of all, Mr. F. M. Claridge, in your August number, observes that he found that smoke aggravated **Egyptian bees.** Some years ago I had a colony of **Cyprians** and soon found that the same applied to them. So long as smoke was not used, they were extremely gentle. What their attitude would have been to the carbolic cloth I do not know. I practically never use this myself, as I find it is inclined to drive the queen and many of the bees down on to the floor-board, which is a nuisance. With my Cyprians I used nothing, and I don't think I averaged a sting a month. Possibly they were exceptional. If you like, I will order a queen to be sent you next year, as a present, of course. They are certainly very handsome bees, and I understand American apiarists have had good results from them. My tenure of the stock was too short to enable me to form an opinion.

In the same number there is an article on **bee keeping in ancient** (or rather, **mediaeval**) **Greece.** I spent two years there before the war and made inquiries about this profession. I questioned two beekeepers and found they had no knowledge of the moveable comb—in fact, a Society in Athens for the advancement of agriculture was starting modern methods on a small scale and had not even arrived at the knowledge of how to send queens by post! In taking the honey, the beekeepers I have interviewed told me that they **drive** the bees into fresh skeps in the orthodox manner; and when I asked how they had learnt this, they said it had always been done. This seemed so extraordinary, that I got a Greek to cross-examine them, in case I might not have understood. But there was no doubt about it. One of these men had 96 skeps (same shape as ours, but larger) high up on Mount Parnes, and the other a large number of skeps (I did not count these) near Echinos nearly opposite Thermopylae. The bees were all brown.

I may say that I never saw a hive within two miles of Mount Hymettus, which I know pretty thoroughly; and I do not imagine much honey ever came from that mountain, as there can seldom have been many houses on its slopes. But all Greek honey would come from the same flower, the Greek thyme, which takes the place of our heather over miles of waste land. It is rather strong to the taste, but very good. The silver-mine referred to by Sir Geo. Wheler was, of course, that of Laurium (Lavrion), near Cape Sunium.

Now as regards **the proposed alteration in the standard frame,** mentioned in your July number. Might I suggest that, unless all the most advanced Countries of the world agree to adopt the same standard (which would certainly be a good thing), the new British standard should retain the present length, but be increased in depth? This would enable us to use our present hives (with an eke) and our present top and bottom bars, merely changing our side bars. The price of timber is so high (and likely to remain so for years), that we do not wish to "scrap" all our present material. Personally, I have a fairly large number of W.B.C. hives, frames in the flat,&c.; and as I clean every hive annually, passing the blow-lamp over every part, they are all as good as new, and likely to remain so for the rest of my life, as no rot can take place.

I should like to add one word about **I.W. disease.** Most beekeepers regard this as an unmitigated curse—I used to; but now, I look upon it as a real blessing. Before it came, this district was rotten with **foul brood;** but as every bee has been wiped out, foul brood has disappeared, and the small, careless beekeeper has been most wholesomely discouraged! Nor do I now advocate, as I used, that every cottager should keep bees on modern methods. My advice now is, to great and small alike, to use the cheap skep and sulphur pit, unless they intend to take a personal interest in their stocks, playing the whole gamut of modern apiculture—in which case I express my entire willingness to help.

For this reason, I always advise a beginner to start with a swarm and to take his courage in both hands and not use a veil—or at any rate, not gloves—in hiving it. By this means he will probably acquire courage to proceed further into the science; and, moreover, the process is so interesting that the innate inquisitiveness of every man will probably tempt him to greater things. I do not believe that any man can hive a swarm without protection and not be left with a feeling of urgent curiosity. I have sometimes tried to analyse the reason of this, and I believe it to be that he finds himself suddenly in partial control of a new and rather terrible force; and the history of invention shows that no man has ever been able to remain at such a point of partial knowledge;—he will face untold dangers in order to know a little more!

Yours faithfully,
H. CAMPBELL.

Brewoods Close,
Cookham Dean.

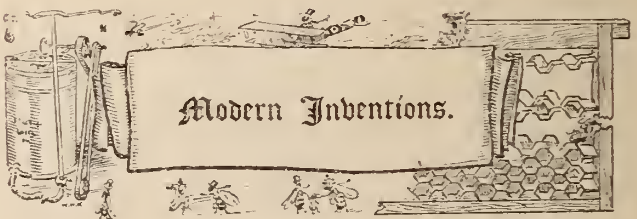
[We may be forgiven for publishing by way of an exception the complimentary remarks at the beginning of these annotations, as they are typical of many others that reach us and clearly endorse our policy. This however does not seem to gain the favour of a good number of other readers, who suggest to us dealing with subjects that are already excellently treated by other contemporaries. The mission of THE BEE WORLD is of a different character, and should be mainly international. If we are forced temporarily to adopt a different course, it is merely because of the limitation of our Educational Fund. We thought we made this sufficiently clear in our last issue, and much regret this unnecessary repetition in reply to much correspondence which we cannot possibly answer individually. The highest interests of British bee culture will always receive our best attention, but we regret our inability to conduct elementary instruction. By doing so, we shall not only be reflecting on the ability of our colleagues in England and Ireland, but will obviously create a wasteful overlapping. Should we succeed, through the moral and material support of leading Beekeeping Associations and Clubs, both in Great Britain and abroad, in the gradual development of this infant periodical, and, concurrently, in the auguration of multiple sections dealing with the interests of various bee communities, we shall follow quite an independent and original scheme which does not admit of the repetition of current literature, except in the form of comments and reviews.

* * * *

We do **not** find that smoke irritates **Egyptian bees** in any special way. In our experience, they are very docile at a temperature of 70° F., and can be favourably manipulated at any temperature above 60° F. At the former temperature, hardly any subduer of any form is needed. At a temperature below 60° F.— the **standard manipulating temperature** for any strain of bees—their open management is only a task fit for a V.C. hero.....But who needs to do this as a routine? Pure Italians have behaved just as badly under such unfavourable conditions which much upset all bees. The sprayer as a disabler is of course handy at any time, but whilst a cold water spray is harmless if not even beneficial to bees in hot weather, even a warm water spray would be very harmful—principally on account of the moisture—at a comparatively low atmospheric temperature of 55° F.

The suggestion of an **International Standard Frame** is a very good one, but before we venture to voice the idea of an **International Bee Comvention** for the purpose of setting this and many other questions of world-wide interest, we cannot help observing again that it is most desirable in the first place to have a representative annual conference of British apiarists to discuss and decide on more and more progressive steps for the successful development of British beekeeping. We cordially endorse the view that a **deep** frame would be a real gain, and one to fit a brood chamber supported on an eke is more likely to be popular than **The Sturges Frame,** which will unfortunately be objected to on account of its greater depth and weight and because of its greater liability to be damaged and to inconvenience the manipulator. With the introduction of **cast metal comb** and **metal foundation,** apart from a suitable **rotatory frame holder** or the like, such disadvantages as the **S.F.** may possess will be reduced to a minimum, and an advantageous **transitional frame** of greater cell area and better adaptability to the wintering habits of bees may be introduced with a measure of success until a new Standard frame is adopted in addition.

Regarding an **average method of beekeeping,** we strongly disapprove of the suggestion that the sulphur-pit-method should be re-advocated. We admit that, after all, the ultimate aim of keeping bees is honey production. But why sacrifice such valuable stocks in place of a more intelligent method of management which should succeed in securing an adequate surplus if full advantage is taken of the honey season, however short? At present many new recruits as bee-lovers are gained monthly. Their enrolment is to be encouraged; but it is no service to Apiculture in any way to leave these recruits to learn from bitter experience instead of liberal instruction at practical apiaries. Nor is there any ultimate advantage in utilising an inhuman and backward method of beekeeping which may or may not mean a greater trouble to the crude apiarist, the keeper of bees, under different circumstances, when the skep, generally speaking, presents a closed book.—Ed., B.W.]


Modern Inventions.

The Metal Foundation.

From a devoted and a sympathetic study of the habits of our grateful friend, The Honey Bee, we have never doubted her ability to accept any form of material to build on her comb. A **wooden foundation,** for instance, would, in our opinion, be just as acceptable to her as wax foundation, and we take the liberty of asserting that those who count on the **odour of wax foundation** as sufficient bait for a swarm to reside in a non-inviting home, however much ideal this may appear to be from the apiarist's point of view, are entirely mistaken. The factors governing **decamping** seem to be more obscure than we imagine, and the mother bee, who is supposed to have no authority with her society, has, according to her "fancy," much power in causing or preventing decamping, and we cannot of course dispute the traditional explanation given in the bee literature, which may or may not be correct. In rare instances we have had bees decamping **in spite of the presence of brood.**

Considering that the **Metal Comb** has proved a great success, and has already been in existence for some years, it is surprising that metal foundation has not made its appearance before. Custom is often a chain of slavery, otherwise why should the trouble be taken to insist on the "Weed" bases of cells in an artificial metal product, which has a solid consistence of its own, when a flat base that would equally answer the purpose, and further add to the strength of a metal comb, and at a cheaper cost, may be adopted? With the metal foundation, on the other hand, there is no greater trouble or advantage in having a "Weed" base as well as any other.

We have already given on repeated occasions, both in this periodical as well as in other bee contemporaries, sufficient comments on the merits and demerits of the MacDonald Metal Comb, which we have no doubt has a great future before it, despite the hopeless opposition of the Trade in America, in spite of which 50,000 of this comb have been disposed of in the States during the 1919 season. We feel sure that even the most conservative apiarist cannot afford to disregard the possibilities of this valuable invention.

But one essential feature, which an artificial comb should possess, namely **solidity,** does not exist in the American comb ; and it is difficult to make liberal suggestions for its improvement without destroying its beautiful engineering fabric. Such a solidity is essential, for the simple reason that once this type of comb is destroyed, it cannot be adequately repaired by the bees. As a progressive step, therefore, it is helpful to introduce a metal comb that may put up with a certain degree of negligence. Towards this end we have been striving, and if it is not already in the hands of British apiarists, it is purely through the gross indifference of capable manufacturers or of the over-occupation of others. Cost did not stand in the way of quick production, and it is obvious when time is valuable, that such work cannot be trusted to the hands of inexperienced metal workers, whose efforts are bound to end in failure.

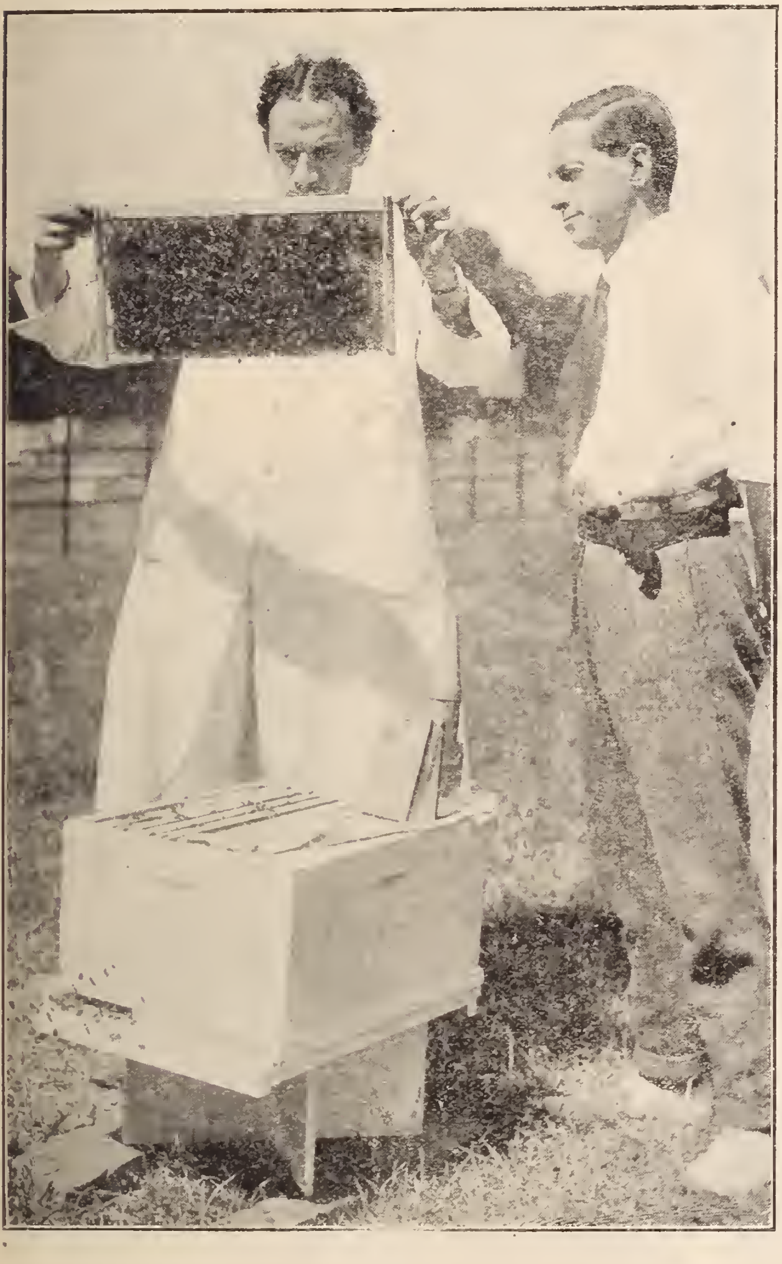


Fig. 22.

Carefully inspecting the Metal Comb for signs of Brood Disease.

The comb shows as many adhering bees as may be noted on a naturally built comb in a populous hive, under conditions of manipulation.

Whilst the development of a superior metal comb in British standard size (to begin with) is awaited by the British bee community, the **Metal Foundation** makes its appearance. Aluminium or a non-poisonous aluminium alloy is again made use of, and according to the resistance of the metal of the foundation mill, a thin or a comparatively thick sheet of aluminium may be stamped. Furthermore, cost enters into consideration, and it will suffice, in the case of the latter, to have a metal sheet of reasonable strength, so long as a hive frame is treated as such and not as an apiary tool......

Amongst the alternatives for a stamped metal foundation is a plain metal sheet, on both sides of which thin wax foundation is fixed. The obvious disadvantages of this, apart from the question of cost and labour, are sufficient to rule it out of serious consideration for general adoption, although it will certainly answer the purposes of some amateur bee-keepers and experimenting workers.

The metal foundation represents an ideal compromise between the wax comb and the metal comb and will no doubt be specially appreciated by those who believe in the full stimulation of the wax secretion function, although, in our opinion, this can be maintained equally well with the metal comb.

By supplying the bees with a frame possessing a strong mid-rib that can be handled in all forms of weather, a more secure natural comb will result, the nuisance of wiring and of the breakage of new combs when travelling with bees will disappear, and pure beeswax will be saved for its rightful place of industrial application in bee culture, namely, in the production of section foundation only.

As an ordinary method of **fitting metal foundation,** it may be accommodated in grooves in the frame bars. With reasonable care it should last a life time, and be in practice as much as a slate is serviceable but without the susceptibility to break. Whenever a comb gets old, or is badly built, the apiarist can afford to clean his "slate" and to teach the bees a new lesson......When it is desired for some reason or the other to sterilise it, the comb after removal of the frame may be boiled at a temperature that will melt the wax without injuring the metal; the latter may then be re-inserted in a new frame. The many other advantages of the metal foundation are too obvious to need elaboration.

The usual note of opposition on the part of some foundation manufacturers may be expected, the modern superstition of bees "preferring" wax foundation (a sister superstition to the claim that they are more delighted with the make of one manufacturer than that of the other) will again be heard, but all these obstructions will not prevent the ultimate triumph of the metal foundation and metal comb.

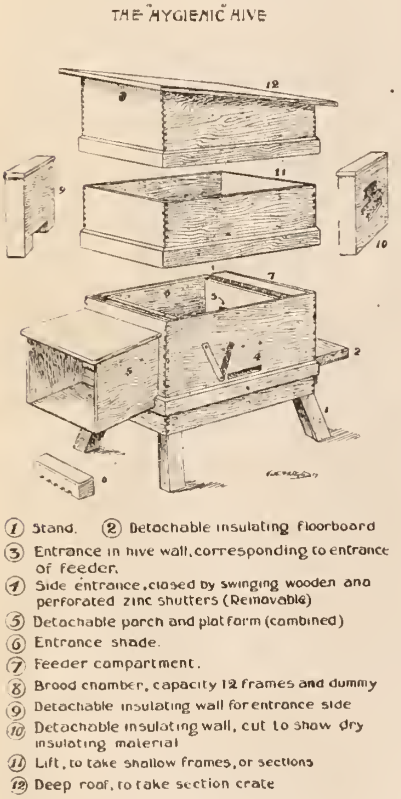
We have not ventured to introduce the metal foundation without the most careful and most impartial consideration, through which we are proud of gaining the confidence of the majority of wax foundation manufacturers in Great Britain. Our judgment has been thought sufficiently impartial by one of the leading wax foundation manufacturers in the World that our opinion regarding the advantages and disadvantages of the metal comb have been sought privately. **Our opinion is that no wax foundation manufacturer can afford not to be interested in it, as it is bound to be the comb of the future. The metal foundation by its distinctive merits has no doubt an equal sphere of usefulness in the immediate future.**

The Editor of THE BEE WORLD is indebted to the courtesy of Mr. Robert Lee, for producing the first experimental models of **metal foundation.**

The Hygienic Hive.

Designer: A. Z. Abushády.
Constructors of First Model: W. J. Owers (hive) and
J. Dennis (feeder).
Illustrated by: Walter H. A. Keyte.
Introduced by: Adminson Ltd.
Manufactured by: James Lee & Son.
Tested at: **The Apis Club** Experimental Apiary.

The striking feature of this hive, the illustrations of which are self explanatory, is its independent feeder, which can be associated, however, with a newly made W.B.C. hive or with any other similar type of hive by making an opening in the stock box to correspond to that of the feeder, which may be supported on a stage, and by having a hinged shutter in the corresponding part of the stock box for external attendance to the feeder.


THE "HYGIENIC" HIVE
12
9
11
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1
6
① Stand. ② Detachable insulating floorboard
③ Entrance in hive wall, corresponding to entrance of feeder.
④ Side entrance, closed by swinging wooden and perforated zinc shutters (Removable)
⑤ Detachable porch and platform (combined)
⑥ Entrance shade.
⑦ Feeder compartment.
⑧ Brood chamber, capacity 12 frames and dummy
⑨ Detachable insulating wall for entrance side
⑩ Detachable insulating wall, cut to show dry insulating material
⑪ Lift, to take shallow frames, or sections
⑫ Deep roof, to take section crate

Fig. 23.

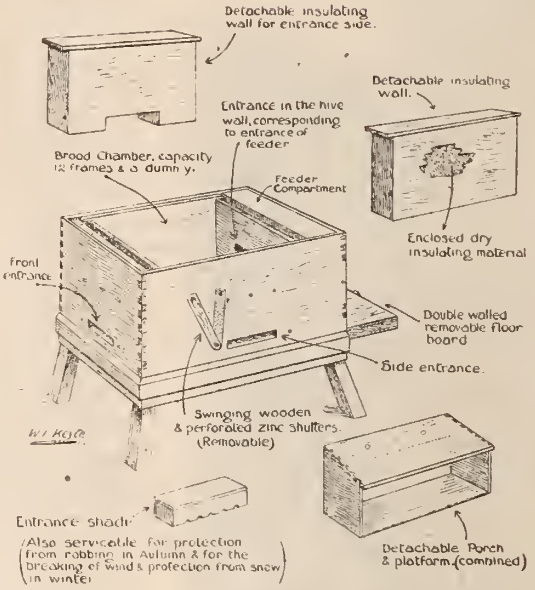

Detachable insulating wall for entrance side.
Detachable insulating wall.
Entrance in the hive wall, corresponding to entrance of feeder
Brood Chamber, capacity 12 frames & a dummy.
Feeder Compartment
Enclosed dry insulating material
Front entrance
Double walled removable floor board
Side entrance.
Swinging wooden & perforated zinc shutters. (Removable)
W. Keyte
Entrance shade
(Also servicable for protection from robbing in Autumn & for the breaking of wind & protection from snow in winter)
Detachable Porch & platform (combined)

Fig. 24.

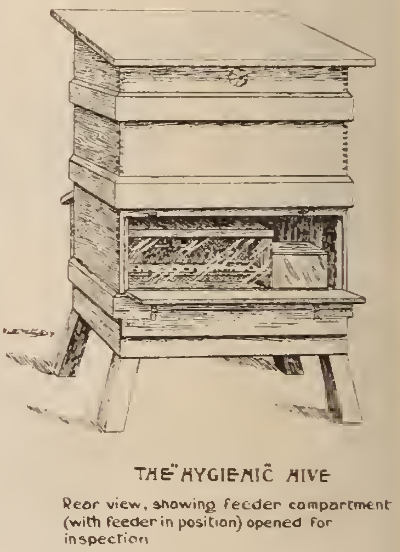

THE "HYGIENIC" HIVE
Rear view, showing feeder compartment (with feeder in position) opened for inspection

Fig. 25.

Prior to the introduction of this method of feeding, the **Alexander Feeder** has been the favourite instrument of independent feeding. It is an ingenious device which is unfortunately accommodated in the most insanitary and most unsuitable part of the hive for such a purpose, since the floor board area of a hive is its coldest part, and no food will retain its heat for long in such a position. The two-section feeder of the hygienic hive, on the other hand, is placed in a favourite site close to the brood chamber, although separated from it. The feeder possesses a filling section, a feeding section (provided with a glass wall for inspection), a float and covers. A child can fill the feeder *in situ* by means of a syrup jug and a funnel, without either upsetting the bees or exposing himself to molestation. Hardly any bee will ever get drowned in such a feeder, which was originally made of zinc, but which can be equally well made of aluminium. In the original model, the interior of the feeding section was lined with perforated zinc, which was soldered to the metal, so as to give the bees adequate facilities for free and safe movement within the feeder and thus entirely avoiding a common cause for their accidental drowning. The feeder can be **slowly** re-charged at any time with complete immunity to the "feeding" bees. Whilst moving this particular hive with the feeder full, a bee was accidentally drowned, and it was interesting afterwards to watch one of her comrades removing her out of the feeder through the feeder opening. Warm syrup placed in this particular feeder will retain its temperature for a long time, but even cold syrup will quickly gain a favourable degree of heat owing to the confinement of the bees in it, once it attracts their attention, which is sure to succeed in doing. A weak nucleus, however, may ignore the food under **unfavourable** circumstances, but is not as likely to so behave with this feeder (on account of its appropriate position) as with others.

The double entrances which the **Hygienic Hive** possesses, together with its **combined porch and platform**, afford facilities for either a side or a front winter entrance, according to the experience of the apiarist as to which is the most advantageous for successful wintering, other conditions being equal. The disused entrance has a swinging perforated zinc and wooden shutters, the former, when exposed, is helpful for additional ventilation during hot weather, and similarly would act the communication slit between the brood chamber and the feeder compartment, when the feeder is not in use, and the above-mentioned slit is covered with perforated zinc or wire cloth. This is also the place for keeping the **hive record**.

The advantageous use of the **removable insulating walls** of the hive, which can reduce the capacity of the brood chamber in a little time, and save much work in preparing for wintering, is quite obvious. Similarly is the advantage of a **detachable insulating floor board,** which provides facilities for winter cleaning.

The three illustrations depicted save much description, although we regret space prevents us from giving other than a fragmentary literary discussion of the essential features of an hygienic hive.

Clearly, the value and working order of such a modern bee home, in the construction of which expense is no consideration, much depends on the standard of workmanship displayed.

THE WEDGE-SHAPED FRAME.

Our attention is drawn by Mr. E. R. Seadon, Bee Expert to Lord Avebury, to the existence of a **wedge-shaped** frame, otherwise British standard size, which was introduced many years ago and is still supplied by Mr. S. J. Baldwin, the well-known manufacturer of Bromley, Kent. This particular frame is intended to fit in a special progressive hive which is illustrated in Fig. 26, and which is supplied by its inventor. Mr. Seadon writes: "When this hive was placed on the market many years ago, Baldwin was fully aware that it would not meet with the approval of all, but for the management and care that are necessary when handling bees, he was perfectly confident that it would defy its equal. **The body** is wedge-shaped inside, and so he departs from the standard idea, frames being made wedge-shaped to fit the body; consequently, when taking out the frames the space inside increases, and when returning the frame the space at the bottom of bar being nearly two inches, naturally the danger of a bee getting crushed is averted and by the time the frame has reached its place again in the body the bees have been returned into the hive freely. **The stand** is independent. **The Floor Board** is made reversible and with a unique arrangement allowing a 3-inch space underneath the frame, but shut off by means of a zinc excluder, may be termed with intelligent management, a perfectly non-swarming hive. There are **Two Entrances,** one on a level with the frames and the other one at the bottom of the 3-inch space. The **Excluder Arrangement** is not fixed, so **for wintering** there can be left this open space for all debris and dead bees to fall quite clear. The top bar of the frame adopted is 17⅞″ and is fully half-an-inch thick. The **Body Box** has double walls at the sides. The hive is provided with twelve frames, two dummies, middle tier, deep and efficient top, either hip shape or flat roof as desired and with sufficient room to accommodate three racks of shallow frames or sections."

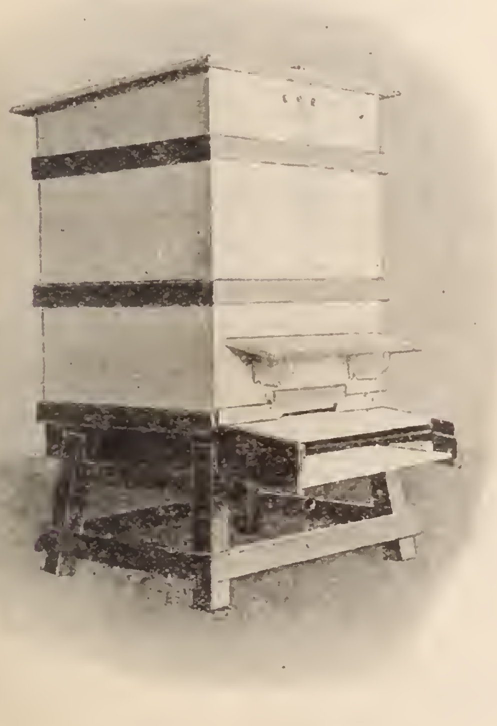


Fig. 26

We have had no opportunity to examine a model of this hive and consequently we prefer not to offer a detailed personal opinion on its merits or demerits, although we are struck by its progressive character. On the other hand we have inspected the **Wedge-shaped Frame** which has been presented to the museum of **The Apis Club,** and we believe that it admirably answers its purpose. It has also been examined with interest by several members of the **Club** and by many visitors. We would remark, however, that the **Staple Method of Spacing** is by no means superior to the **W.B.C. Metal Ends,** which admit of both wide and close spacing, although at a little inconvenience when propolised. These are in our opinion equally superior to the **American Method of Spacing** which permits only of one measurement. A combination of both methods would no doubt be an advantage.

THE "A.Z.A." ADAPTABLE HIVE BOARD.

To those apiarists who have found a decided advantage in the adoption of **The Brood-Incubating System of Intensive Breeding** originally suggested by the Editor of THE BEE WORLD, the utilisation of the detachable base of the **Brood Hatching Chamber** as a winter board is self-evident. To those on the other hand who do not possess or cannot afford a sufficient number of these chambers, or who have not sufficient confidence in their ability to manage the appliance in spite of its simplicity, a very simple wintering and clearing board which has multiple other uses has been suggested by A. Z. Abushâdy, and is being manufactured by Messrs. James Lee and Son, of Uxbridge, who have presented **The Apis Club** with a specimen model. The board permits of a ¼″ bee space above the brood chamber and is divided into three equal parts: two side sections of perforated zinc for the purpose of free ventilation (principally for summer use) and a central wooden part fitted with two detachable Porter's bee escapes, one at each end, and provided in the middle with a circular hole 3″ in diameter The latter has a swinging queen excluder also a similar perforated zinc cover, the cover in use being kept in position by means of a spring. The uses of the board which presents in a different shape the base of the Brood-Hatching Chamber at once suggest themselves to the modern apiarist who has enterprise and originality. **For autumn management and wintering** the excluder is rotated, and the hole is utilised as a **feeding hole,** whether for syrup or candy feeding. The same hole, during the breeding season may be left freely open in case of utilising a double brood chamber. Again, the bee escapes may be detached, plugged, or left in use, according to the method of management employed for the time being. In short, this simple board will be found of service during all seasons and can be made at any time the foundation of one form of a brood-hatching chamber.

During the war the standard of bee goods produced by nearly all manufacturers has suffered through forced industrial circumstances. The effects of this degeneration are still with us. And although we note that conscientious manufacturers are never fully satisfied with their products, especially when over-worked, we have no hesitation in testifying to the good workmanship exhibited in this useful hive accessory, which is disposed of at a very moderate price (in spite of the high cost of metal) that is well within the reach of every smallholder. As in the case of the Brood Hatching Chamber, the Editor of THE BEE WORLD has no commercial interest of any shape in the development of this appliance.

NEW ERA FOUNDATION.

From the Foundation Factory of Mr. S. J. Baldwin, we have been presented with samples of wax foundation, which is of pure and non-bleached beeswax. We are informed that sheets for use in brood chamber frames may be made any width up to 14 inches, by a special machine which is believed to be the only one of its type in England.

To the disgust of many conservatives the cell bases are impressed the "wrong" way up. As we find that bees naturally build many "wrong" cells and apparently do not truly discriminate in their wax building between one pattern of cells and the other, and are only interested in the sizes and angles of their cells, and furthermore, as the little strength which the wax foundation possesses is really represented in the wiring process, we have but to congratulate the introducer of the "New Era Foundation" on his logical independence.

With very few **original** modern works on bees in existence it is not surprising to find the advice passed from one manual to the other about the correctness and the faultlessness of impressing foundation. It is time however to revise such obsolete notes. We have typical specimens of naturally built comb in the museum of **The Apis Club** that testify to our assertions.

MEADOWS' CLEARING AND WINTERING BOARD.

As we go to press, a specimen of this excellent board is presented to us, and although we have hurriedly examined it, we do not fail to appreciate its value, and for the benefit of our readers, have no wish to delay its review.

Ever since the introduction of **The Brood Hatching Chamber,** some manufacturers have been endeavouring in one way or the other to infringe on the design by marketing the appliance in separate parts, and principally the base of it, and by advancing the same suggestions, originally advocated with the B.H.C. This is not a new practice which is clearly injurious to the dignity of the Trade. It would have been tolerated were it not that a certain proportion of the small profits realised by its manufacturers, Messrs. James Lee and Son, are intended to be contributed to **The B.B.K.A. Research Fund.**

The Meadows Clearing and Wintering Board, on the other hand, has a vivid touch of originality which is characteristic of the bee master, who has greatly helped to develop the honey extractor in this Country. Had we previously seen this board, which has just been introduced, we are not sure that we would not have saved ourselves the trouble of suggesting an approximate type of wintering and clearing board. It is described by Mr. Meadows as follows:

"This is a Wood Frame having the bottom divided into three spaces, the two sides Double Wire Cloth with a space between so the bees cannot injure each other. The centre, a plain board with a removable Porter Escape; clearing is more rapidly done on account of the attraction and smell from the underneath bees.

The Frame or Outer Rim is thicker than the wire and centre board, and gives a bee space underneath all, and makes it a perfect Wintering Board. It is necessary the bees should have ready access over the tops of the Frames in the close season not for the bees alone, but for the queen, weak Spring Stocks are frequently caused through the queen being confined.

Useful for building up weak stocks over strong colonies and with two dummies make three Nuclei. A "go-a-head" beekeeper will find numerous uses for it.

It is perfect for feeding through the escape hole, there is no disturbance to quilts.

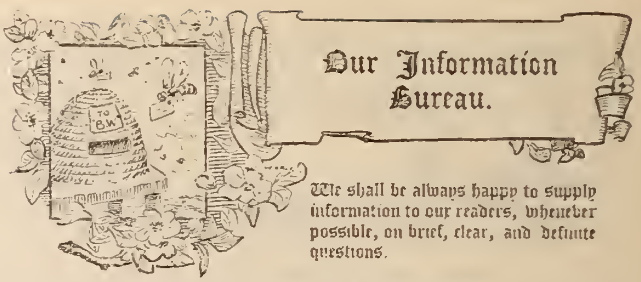
The escape is easily removed and a bit of Excluder can be used to fit so that two lots of bees with their two queens can be kept one over the other and heat from bottom colony through the Wire Cloth utilised."

We may remark that we do not consider the double wire cloth a necessity or even an advantage at least for economical reasons. Wire cloth, in addition, is not as easy to free from propolis as perforated zinc. The queen excluder supplied is of the "Whyte" wire pattern, which is decidedly superior in design and strength to other patterns of wire excluders that we know of. Those beekeepers who believe in a foraging bee carrying her load from the fields to the top storey of a "Skyscraper" hive may or may not be satisfied with the respectable piece of queen excluder supplied......In our humble opinion, as we think otherwise, and for other reasons, no such dimensions are necessary. The surface area of the hive entrance in itself is a practical witness. For a winter board which is intended only as such it would be an advantage to have a deeper rim—as much as one inch depth.

Neither Mr. Meadows nor ourselves have disclosed the simplicity and intelligence of his design which belongs to the central section of his board, **every part of which is detachable.** Only a good illustration or an inspection of a model will reveal this. His specimen bears the pride of the good artist and craftsman.

The appliance is certainly worthy of introduction in every modern apiary.

⁂ Manufacturers and inventors who are interested in presenting models of special appliances and hives (miniature models being preferred) to the Museum or to the Experimental Apiary of **The Apis Club** would be rendering a helpful educational service, not only to members of the **Club**, but to the many visitors, both beekeepers and others, who come from distant parts of the Country and who would greatly appreciate such an exhibition. We shall not fail to review from time to time these presentations with both frankness and impartiality.



Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

BEE SHOWS.

Q. Would it not be possible to hold a competition for stocks of bees—something after the style of our Poultry Laying Competitions—to prove which were the best strains for honey gathering, etc., and to stimulate interest and create a healthy spirit of rivalry between breeders? There is nothing like competition for the progressive welfare of any industry. It would also be a guide to those commencing beekeeping, and I write as one of this class.

A. Bee Shows are only useful for exhibiting different strains of bees in observatory hives, both for publicity and education. They can never "prove which are the best strains for honey gathering." This can only be detected by their trial, and even then, the evidence is hardly fair if no controls are used, and if the form of management and the conditions of the harvest are not taken into consideration.

THE QUALITIES OF HYBRIDS.

Q. May we have some notes on the qualities of hybrids: my Simmins princesses may mate with either Italian or black drones. Are hybrids always bad tempered? How does a bad tempered stock behave?

A. We have sometimes found bees, which are most docile under favourable conditions, as vicious as could be under unfavourable ones. Apart from the factor of the weather, bees take exception to manipulations when not accustomed to it for a long time. Both pure strains and "hybrids" share these features. The qualities of "hybrids" are no more or less than a composition—variable within limits—of the qualities of the parents. Therefore they may or may not be vicious.

The behaviour of a bad tempered stock is principally noticeable whilst manipulating. A good tempered stock may forgive some carelessness, but a bad tempered one will not, and the utmost gentleness and firmness will not ward off the stings of some conscientious objectors....A passer-by near the hive also may receive a souvenir, supposing no subjugator is used; members of a gentle stock will not rush at one's hands or raise their "tails" with weapon glistening and poison already secreted. Bees are sure to get vicious when a robbery is attempted. They will be rapidly parading round the entrance with "wings up" and will not miss interrogating (and often in a rude way) every worker leaving or entering the hive, and specially the latter. Viciousness is more pronounced in **in-bred** bees, but not limited to them.

CUTTING Q.C. OFF METAL COMBS.

Q. Is it an easy matter cutting queen cells off metal combs? I should not think so.

A. No. It is not only difficult, but impossible. It will always injure the cell (the base of which being solid) as well as its occupant. Fortunately, this is by no means the only way of getting queen cells, whether on a large or a small scale. In this respect, however, the metal foundation has an advantage over the metal comb.

A SUPERIOR METAL COMB.

Q. Am I correct in gathering from your notes in THE BEE WORLD and **The British Bee Journal** that the metal comb which you are introducing will be a greater invention than the American metal comb. Are there any restrictions on the importation of the latter?

A. You are not correct in your impression. We are merely introducing a substantial article that can withstand a certain degree of negligence. It is not an easy thing to accomplish. Nevertheless, it bears no comparison to the ingenuity of the MacDonald metal comb, which is a wonderful piece of artistic engineering. There are no restrictions at present placed on its importation to this Country. Write for a literary brochure or for supplies to: The Aluminium

Honeycomb Co., 600, Central Building, Sixth and Main Streets, Los Angeles, California, U.S.A.

WINTERING IN TWO STOREYS.

Q. Can I winter one stock on top of another with an excluder between ?

A. Yes, but at a risk. If a sheet of newspaper is spread over the lower brood chamber, then the excluder rested on it, before finally placing the second stock above, amicable relations between the workers will generally result (Dr. Miller's plan). There is, however, a risk of losing, at least, one of the two queens. The excluder will not prevent the bees from taking cleansing flights, because if the weather is such as to permit of their movement outside the hive, they ought to be equally able to move within it. The plan will not succeed unless both brood chambers are "boiling over" with **young** autumn bees, otherwise a heavy mortality will result, heat will be dissipated upwards, and should many bees die from the upper stock and cover the queen excluder, the survivors amongst the latter will be nicely "excluded".

GLASS QUILTS.

Q. Are glass quilts all right in winter ?

A. They are not so good as the perforated zinc or wire cloth winter board, because they permit of the condensation of moisture on their under surfaces, which may drip over the cluster. In addition, they do not afford liberal ventilation (during damp cold weather) should much packing be used above. Yet we have heard a good deal of favourable testimony about the Burgess Glass Quilt and independently from different beekeepers of experience.

ECONOMY IN WAX BUILDING.

Q. Do bees build comb from their own wax on the foundation, or do they use part of the foundation to make the cells ?

A. Although bees at times utilise part of the comb wax for "mending" other parts receiving their immediate attention, we have not known them to disrespect wax foundation to this extent. They are generally very extravagant in wax building, and will afford to drop many wax cells on the floor of the hive. But when they wish it, they only disregard the worker bases and deliberately build drone cells, or even brace combs (the latter generally appealing to weak nuclei, in spite of correct spacing of frames)!

MAKING NUCLEI.

Q. Nuclei were made in August at 2 p.m. and given a queen cell each, and the bees released at 10 p.m., the same day. Was this correct ? The nuclei were packed with bees three days later and the queens hatched.

A. Our correspondent does not give sufficient information for judgment. As he does not specify an out-apiary, we presume that they were raised and accommodated in the same apiary. The weather must have been so warm, and the combs with which he started the nucleus must have been so rich in emerging brood, that it made little difference to the success of the experiment the return of many flying bees from the nuclei to their original hives on the following days, otherwise it would be advantageous to accommodate such nuclei in an out-apiary some distance (e.g., a couple of miles or over) from the stock apiary. Releasing the bees during the evening is correct. It ends their anxiety and serves to divert their attention to getting familiar with their new home during their rest time.

THE POTENTIALITIES OF INCREASE.

Q. If I start an apiary with six stocks, each headed by a queen of a different race, and continue to increase by division for five years, what are my prospects assuming I started with queens of proved prolific strains ?

A. These entirely depend on the labour you are prepared to give, and on your interest in introducing fresh blood, and keeping only **vigorous young queens**, thus minimising the winter mortality. By utilising the brood-hatching or incubating system of breeding, your six stocks during the first year can be developed to the big minimum of thirty or to a grand maximum of sixty, should you be enterprising enough, and should you have at your disposal adequate technical assistance and plenty of artificial food to give. It would be a real work for you and your friends—not the lovable recreation that you read about in propaganda literature. You can calculate for yourself the extent of future increase.

Provided you follow a most conscientious and a scientific course of management, your losses from all causes, even in infected areas, should never exceed or even reach ten per cent. We do not want to insist that they should be nil. It is not impossible, if negligence through over-work or through lack of interest or means, be entirely excluded. Otherwise you will be building on shifting sand, and your losses may be a hundred per cent. plus a great discouragement.

IMPORTATION OF AMERICAN QUEENS.

Q. What are the chances of queens imported from U.S.A. in early April surviving the journey ?

A. The highest mortality that we know of in importing American queens in numbers is less than thirty per cent. Cases are known, however, of successful importation. It seems sometimes to be a matter of chance (whatever its factors may be).

A CHART OF BEE STRAINS.

Q. Can you give us a coloured supplement with twice full size really well done illustrations of the various "races" of bees : queens, drones and workers. I, for one, would be quite willing to subscribe one pound towards the production of such a chart.

A. In crediting Lt-Col. E. O'Brien, D.S.O., with this excellent suggestion, we must equally credit Dr. G. R. Strong with the admirable advice relative to the bacteriology of bee diseases (†)

Both suggestions and many others that we have in mind are part and parcel of a programme for the production of a better edited bee magazine. No doubt, our esteemed correspondents are under the impression that we have such a handsome Educational Fund at our disposal, that if the paper is so much lacking in additional improvements, it must be surely our indifference and lack of imagination and enterprise. The fact is that the Funds of the **Apis Club** are very limited, that through the heavy expenditure of THE BEE WORLD, much experimental work which we had originally planned had finally to be deferred, that the magazine is issued at a heavy sacrifice to ourselves, which is not merely financial, and that in spite of entirely avoiding to put to the test the liberal promises of many leaders until the paper was a reality, we regret to say again that the fulfilment of these promises of support has taken at best no shape other than endless and wasted compliments, and the exaggerated praise of a labour which should have been theirs. The cruel trials and overwork which we have had to endure and are still enduring we shall not relate. Our space is not open to personalities. But we have ample excuses, as we have mentioned before, for ceasing the production of this magazine, were it not that we are staunch believers in perseverence, and were it not that we still entertain the hope that some other group of leaders, who have a real interest in progressive beekeeping, and not in party strife, will realise the educational service which this paper may be capable of, both at present and in future, and will come to our aid. We are thankful, however, that in the first phase of this battle we have not been defeated, and still more for our fortunate escape from the abuse which has been the reward of most of our colleagues both in England and Ireland who have done, needless to say, a much longer and a far greater service......

Members of the **Club** have candidly criticised us for what is described as "selling the paper for nothing," and we are obliged against our wishes to refuse additional subscribers. The paper will only be supplied therefore to members of the **Club.** And although the cost of production has already more than trebled, the advance in the membership fee is far from being proportionate. Nevertheless, we are most anxious to reduce it to the lowest minimum, should we only succeed in getting a sufficiency of advertisements. Here is the right field for the constructive help of **all** our friends.

Under the circumstances, is it unreasonable to remark that such a splendid idea as pointed out to us by our gallant friend is entirely beyond our means to accomplish ? He and a few others will no doubt contribute towards it, but many others will not, and we shall then be putting on our heads another worry. Can we imagine any decent support for what will be described by our trained army of wreckers as "the fancy of a crank" when nothing on earth will satisfy their sins ?

To do the work thoroughly and on original lines, as it should be done, we shall have to secure multiple bee strains, at least as queens to begin with, and to arrange for their life painting in colour, for detailed comments, and for the best artistic reproduction in three colours. The work is very simple when sufficient financial assistance does actually exist, but a gigantic and an impossible task when it is a mere speculation......

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† THE BEE WORLD, August, 1919, p. 56.

DEFENDING NUCLEI AGAINST WASPS.

Q. How can nuclei be defended against wasps? I lost two valuable queens, the first I have ever raised (this is only my second season as a beekeeper) from a specially selected queen, by attacks from wasps which I could not stem.

A. Please read our editorial on the Wasp Peril. Any nucleus with an inspiring queen should be capable of taking care of themselves provided: (1) They are sufficiently strong **in proportion** to the size of their home; (2) all parts of the hive are made robber-proof, and no manipulations enticing robbing are conducted; (3) the hive door, being the only entrance for robbers, is protected by means of an **entrance shade** with a two or three bee-space opening, or the like. The entrance shade should have been supplied in anticipation, as it is desirable to accustom the bees to its presence before the incidence of cold weather. It is equally serviceable in winter as a wind break and for preventing the reflection of the glare of snow into the hive.

Attacks by wasps will not become a serious menace unless the above safeguards are ignored and late in the season, when weak lots should be united. But sometimes, however, several untraceable colonies of wasps will direct their attention to one particular hive, and unless the beekeeper will succeed in trapping them by closing the entrance of the hive for a day, and by removing it temporarily to a distant position, **placing a wasp trap, richly baited** (a little honey of a strong aroma, e.g., old skep honey, is a most excellent bait) **in place of the hive, or preferably near its site** for the day, it is a far wiser plan to unite the bees to others. This course, however, will not be found necessary, should our suggestions be carried out.

THE 16″ × 10″ FRAME.

Q. Where can the 16″ × 10″ frames be obtained regularly, also section crates to fit on hives containing these?

Is it possible to produce metal combs, whether of the foil pattern or of your pattern, to fit these frames?

Do you consider this frame a desirable one?

A. The 16″ × 10″ frame may be obtained from any of our advertisers, and no doubt from other leading firms. Mr Robert Manley of Brightwell, Wallingford, is one of its champions, and has done much writing lately for the purpose of popularising it. It may interest you therefore to communicate to him.

The frame can be easily fitted with a metal comb or with metal foundation. It is merely a question of demand. It is a good-sized frame. We would, however, prefer it to be 10″ × 16″ instead of 16″ × 10″, that is, the top bar should be 10″ and each of the side ones 16″. When this is objected to by the manufacturers on account of its unsuitability for **present hives** (and not for future ones) or because of industrial reasons, the objection has some logical excuse, but when trade convenience is employed as a lever for airing groundless theories in the shape of condemning a deep frame as being "harmful" to bees in winter and the like, one cannot admire such a manœuvre.

THE INFLUENCE OF THE QUEEN.

Q. I am now wondering whether the queen has more influence over the economy of the hive than is usually thought. The reason I mention this is because, through the cold inclement weather, none of my stocks have been working at all, with the exception of the one to which I united your Egyptian nucleus, and strange to relate, they are working hard bringing in heavy loads of pollen, the day through. The prolificacy of the queen will not account for it, as you know many queens will lay a great number of eggs at this period of the year, but the workers will not incubate them. It is rather strange that the Egyptian workers are not in evidence, the Italian workers doing the external work. I shall appreciate your views on the matter.

A. Our experience with Egyptians is not only that they are most prolific, but most considerate to their brood **at all times**. The latter feature is to be much appreciated during the autumn, and is one of their good qualities. They will continue incubating the eggs and brood until the queen ceases to lay.

The small nucleus to which our correspondent refers was mainly composed, as he must have noted, of young Egyptians and of mature adult bees from different other strains, which were united to them both for the purpose of enforcement, as well as for study. This will explain the devotion of the Egyptians to the brood nest.

The foraging time of Egyptians is pretty good, but they bear no comparison to Dutch bees, which are often quite active when most other strains would prefer to stay within their hives. until the incidence of a higher temperature

Hive bees of whatever strain, on the other hand, will fly freely, even at comparatively low temperatures, when given stimulative food e.g., syrup. Therefore before you conclude that any strain of bees are active by nature you must exclude stimulative feeding.

The queen has no direct influence on this behaviour.

THE LANGUAGE OF BEES.

Q. Can you tell me what is the cause of the very deep note sometimes heard in the hive? I can only compare it to the sound of a wood pigeon, but perhaps a little deeper. I am sure you must have heard it. I have asked many beekeepers, and have also asked **Gleanings**, but cannot get to know. It has nothing to do with queens, as I have repeatedly heard it in a queenless stock It would be interesting if you or your readers could elucidate the matter.

A. Our friend has well described a sound which we have repeatedly heard with amusement, as it is foreign to the familiar language of bees.

It seems to be produced following various circumstances which have only one common feature, namely, the presence of an exceptionally important gratifying task on hand. It may be therefore an attempt on the part of some of the more enterprising workers to draw the attention of the others to some work worthy of their immediate attention.

These are some of the circumstances under which we have personally noticed this sound more produced: (1) A nucleus of bees were deprived of their queen and later their queen cells were destroyed, and finally they were united to a diminutive nucleus with a good queen in an observatory hive The production of this **wood pigeon sound** was noticeable in the evening. (2) When an orphan colony is progressing with the building of queen cells. (3) When a strong swarm is busily engaged in establishing itself.

Curiously enough we have noticed it more during the evening than in the day time. Has it anything to do with the old foraging bees? We presume they have a right to criticise the house maids!

TRACING A SWARM.

Q. On returning home towards the evening, I was pleased to find that a swarm of bees have taken possession of a decoy hive in my apiary. I could not trace them to any of my hives or skeps, and no one has seen them leaving any of my colonies. None of my bar frame hives on inspection showed that they have swarmed recently; and as for the skeps, they apparently look quite all right. Can you offer a suggestion regarding tracing them?

A. It is possible that the bees have issued from one of your skeps, when you should have been able later to ascertain this by watching their behavior, or through the issue of a cast or casts, or through noticing the mating of a princess. Otherwise it is too late now to trace them.

Had you moved the hive from its site the day following the possession of it by the swarm, directly the bees started to fly and had you dusted them with flour, you would have been able to see for yourself to which hive they would ultimately go back **in numbers** after flying to the original site of the hive. Do not mistake, when you have an opportunity for trying this in future, the **drifting** of bees to the other colonies for a return. They may after all have come from another apiary to a better beemaster......

⁂Despite much extracting and sifting, and despite the issue of a **Special Autumn Number,** a good deal of useful literature, which we would have been very pleased to publish in this number, is unavoidably held back. Contributors are earnestly requested to abbreviate as much as possible, and to treat mainly subjects of international interest. Amongst our multiple difficulties—(on which we have wasted so much space for what amounts in reality to no more than mere hinting at, and which we hope will save us from the future worry of much private correspondence)—we trust our incapacity may be generously forgiven.—Ed., B.W.

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÁDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their school or nationality, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

Publishers :

The Apis Club, Port Hill House, Benson, Oxon, England: An International Institute for the service of Modern Apiculture, and for fostering a genial spirit of scholarly brotherhood amongst bee-keepers of all countries, with the co-operative object of promoting their educational and material interests.

⁂ Membership of the **Apis Club** is open to all practical apiarists everywhere, as well as to all lovers of the Honey Bee. Annual Membership Fee : 7s. 6d., and includes free delivery of this Magazine, which is issued only to members of the **Club**.

Vol. I. No. 5. OCTOBER, 1919. Monthly.

Editorial.

ELIMINATING I.W.D. THROUGH INDEPENDENT BROOD INCUBATION.

In the **B.B.J.** for Oct. 9th, appeared an interesting contribution by Mr. J. N. Kidd on the elimination of I.W.D. by means of destroying the bees in a diseased stock and hatching the brood in a chicken brooder. He would then give a ripe queen cell or a new queen to the brood accommodated in the latter. The formula which the writer "pasted in his hat" in conducting his experiment is this : In the case of Foul Brood the brood only (?) is diseased ; then why should we not conclude that in the case of I.W.D. adult bees alone are affected ? The researches of Dr. White and others no doubt have shaped his argument.

So far as the independent hatching of bees in a chicken incubator is concerned, the experiment is not new ; and we fear it will not eradicate the infection, in the absence of a germicidal treatment, which Mr. Kidd has avoided, for experimental reasons. This apprehension is on account of the contamination of the combs, apart from the brood itself, through the food, with **Nosema Spores,** however variable the resistance of the latter may be outside the body of the bee. As soon as the emerging brood will afford suitable medium for the repetition of the infection cycle, all the trouble taken will end in nought. Furthermore, supposing these young bees will finally leave the incubator in a healthy condition, no one can foreshadow their ultimate fate when diseased **drifting** bees intermix with them, or should they become exposed to **robbing.** Again, the introduction of a new queen entirely alters the trend of conclusions, since one will ultimately be dealing with a new strain of bees which may or may not be of better stamina than the original diseased strain. It is impossible to avoid sources of infection ; and the best preventive remedy, so far as we can see, lies in the high quality of the mother of the colony. Should this degenerate, no chicken brooder and no germicide and none of the so-called "cures" will afford a miracle.

Mr. Kidd's experiment, however, serves another purpose. **It confirms the economical value of independent brood-hatching.** Not every beekeeper can afford a chicken incubator. Unless he is a poultry keeper or a queen breeder, this appliance is not wanted. But even the humblest modern apiarist can afford to possess at least one **brood-hatching chamber,** and the beekeeper on a large scale may well afford to have almost every one of his hives fitted with this chamber, which is capable of performing more than one important function at one and the same time

So far as independent brood-hatching is concerned, whether for the purpose of **raising nuclei** or otherwise, the appliance is already in popular use amongst those engaged in re-stocking work, apart from many smallholders ; and the results of its employment have been most encouraging. It can be supplied, to order, to fit any hive on the market. And when we laid a condition for its free use that the manufacturers should not dispose of it at more than ten shillings and sixpence, in spite of the great advance of the cost of production, and also to pay a proportion of any return from its sale to the **B.B.K.A. Research Fund** and none to ourselves, we aimed solely at popularising a new and a scientific method for the profitable management of bees.

Every apiarist, great or small, is now preparing for the 1920 season. The reader who does not possess this appliance, and who is not familiar with the incubating system of management will do well to peruse our condensed notes on this subject in our Special Autumn Number (September), and should not delay to secure well in advance all his additional equipment for the coming season.

THE EXTRAVAGANCE IN WAX SECRETION.

In the September issue of **Gleanings**, Mr Arthur C. Miller remarks : "......chips are not often in evidence, the bees using them more readily than dropped scales. And by the way, wastage from dropped scales is very small, as can be shown by putting a tray covered with wire cloth beneath a colony building comb. It is said that bees 'chew the scales and add saliva to them.' Perhaps it is so ; but, so far as I have been able to discover, propolis only is added and quite a lot of that. Apparently the secretion of wax is **involuntary** on the part of the bees, and is governed by the kind and quantity of food they have. Super abundance of nectar or sugar syrup brings the secretion of much wax, even in the cool weather of fall and spring ; while a similar or great quantity of ripe honey does not produce this effect, except sparingly, either in warm or cool weather."

The following comments may be readily presented ; (1) the experiment suggested is sure to prove fallacious for the simple reason that neither wire cloth nor ordinary perforated zinc will act as a good sieve in the absence of a shaking movement ; (2) bees which will not tolerate the presence on the floor board of the hive of insignificant particles of sugar, will not allow much débris and wax scales to lie about ; (2) whilst admitting that it is possible that a certain amount of propolis (in the same way as pollen) may be used by the bees for mixing with their wax secretion and thus giving it a dark colour apart from rendering it more adhesive, as noticeable with the wax of bees which do **not** excel in making comb honey, it must not be overlooked that the chemical and physical characters of wax will, in any case, render it sticky ; that the odour of beeswax does not generally suggest the incorporation of propolis ; and furthermore that strains of bees which are far from being fond of gathering much propolis, such as the Egyptian Bee, will build dark comb which does not even suggest the incorporation of much pollen. Does not this point out to the variation of the colour of wax as secreted by different strains of bees, apart from the variable factor of food ? (4) The secretion of wax is hardly involuntary, since it appears to require a high temperature for its secretion; and the bees are never known to secrete wax without preparing for it by clustering and insulating the wax secretors and builders. No one has been able to record, for instance, a forager gorged with nectar caught at the hive door with wax scales protruding, or to have seen in an observatory hive a poor bee moving about and relieving herself of her wax burden; (5) should wax secretion be involuntary, one would equally expect its secretion during the winter ; but the evidence points to the contrary, and it is worth while to remark to those who imagine that the cessation of wax secretion in winter may be contributing to the illness of the bees. that such rest to the worker bees should be as welcome and as logical, in the sense of being a well-earned rest, as the cessation of ovipositing during the same period is to the mother queen; (6) Mr. Miller does not give data for his final conclusions regarding the amount of wax secreted in relation to the quality of food and the season ; it is possible that when ripe honey is presented to bees they are stimulated to store it, if possible, or simply to feed on it ; whereas nectar and syrup stimulate wax secretion for the purpose of affording the necessary receptacles for the " flow " of nectar or artificial food, in order to be stored and ripened, this in itself suggests that wax secretion is **not involuntary**, and that in this matter as in some others, we are not crediting our bees with their natural endowment of judgement. (7) Whilst experimenting with the **metal foundation** during the current month, and at a variable low temperature, using candy and then syrup feeding for stimulating wax building, the experimental colony as well as the control colony (which had frames fitted with **wax foundation**) avoided wax building, so long as they had empty cells in their old combs ; no doubt the cold weather equally discouraged them. During the summer, on the other hand, a frame fitted with foundation and placed in the centre of the hive would never be tolerated as such : the bees will build on it, irrespective of the amount of their income, and possibly under the influence of the breeding stimulus ; so after all, the season of the year has a greater influence on wax building than the amount of their stores ; (8) bees will not worry about old wax ; it is the exception and not the rule that they utilise it ; as an illustration, we may repeat that we have practised leaving destroyed queen cells on the floor board of the hive, only to find later some scavengers busily engaged in removing little bits of old wax ; and when opening the respective hives, some scavenger bees were found nibbling the mass of old wax on the floor board of the hive ; we avoid therefore whenever possible giving the bees this unproductive labour.

That bees are extravagant in wax building we have no doubt. But they do their work well ; and it is idle therefore on our part to criticise them for not possessing better tools which will save the dropping of so many wax scales that in turn waste the labour of so many scavengers.

The following **practical conclusions** may be logically arrived at :

(1) On ecomonical grounds it is highly advantageous to equip the modern hive with artificial combs (aluminium, or, better still, a non-poisonous aluminium alloy, which is far superior for many obvious reasons to other metals or to non-metallic substances that may be moulded).

(2) During the working season, bees secrete a good amount of wax : and therefore there is no good object served by encouraging an extravagant maximum of wax secretion.

(3) Wax, being a secretion (and **not an excretion**), which is produced voluntarily at the cost of much food, will not injure the health of the workers by its temporary cessation during the resting season.

A DOG LICENCE.

To use the words of the Archbishop of Armagh, beekeepers in Great Britain, both great and small, are, with few exceptions, proud of paying only half-a-crown subscription to each of the British monthly magazines which may be subscribed to—" the same amount as paid for a dog licence."

It is no secret, that although the value of the pound at present is no more than eight shillings, according to the official estimate, and is actually on the decline, the British bee journalist is too nervous to double the subscription fee, although he is in a pressing need of such an action. Practically the whole Bee Press of this Country is hopelessly supported with advertisements, and have nothing in the shape of a respectable Educational Fund. And yet the British Bee Journalist, who is entirely prevented by the indifference of the British Bee Community from effecting any substantial improvement in his production, is accused of a gross incompetence when compared with his American colleague ! Comment is superfluous. . . .

LEGISLATION.

We are solemnly told by Government officials that "in view of the unfortunate fact that some beekeepers do not pack their hives properly for winter, and do not see that the stocks have ample stores, it is well to know that the whole problem of bad beekeeping is receiving the attention of the Board of Agriculture. The Horticultural Section is giving consideration to the question of asking for legislation to protect the competent and careful apiarist from the man who neglects his stocks."

The amusing part of this ambiguous statement is the accusation levelled at some beekeepers that they do not give their stocks " ample stores." The learned officials do not inform us from where can these " ample stores " be secured in a bad season, when the Government is satisfied with a sugar ration of no more than ten pounds per colony. We have no hesitation in asserting once more that many stocks will be lost through starvation (which will no doubt be labelled as a curious form of I.W.D.) if the Government will not revise their decision at an early date and supplement the present ration. And even then, the question may be rightly asked whether the authorities have correctly behaved in forcing beekeepers to resort to candy feeding to a great extent, when they could have secured for their bees a sufficiency of mature syrup for autumn and winter feeding had they been permitted from the beginning to obtain a sensible ration ?

When such an illogical experimental policy is the order of the day, and when the results of scientific research are so traditionally discarded, one wonders in what light is the " whole problem of bad beekeeping receiving the attention of the Board of Agriculture ? "

Those who are not acquainted with official methods of management will often rush to criticise our bee experts, who are attached to the Government, for the bee-keeping policy of the latter, whereas the fault lies in the fact that our expert advisers need a greater authority for shaping a better bee-keeping policy for the Government, which gets the credit for their good advice and service, leaving to them the blame for its blunders.

British beekeepers are dividing themselves into two groups in relation to the subject of **legislation for bee diseases** : (1) those who are whole-heartedly in support of legislation ; and they form a respectable majority ; and (2) those who support legislation in principle, but fear the autocratic control of the Board of Agriculture ; and they form an appreciable semi-opposition group whose views cannot be ignored. We shall not consider the insignificant clique who have no regard to the interests of the community and are entirely opposed to legislation from selfish motives.

It is a great pity that, so far, unity has not replaced such a deplorable dissension, which is clearly against the best interests of British beekeeping. But what truly surprises us is the entire absence of a constructive discussion on the form which legislative measures should take. The discussion seems to revolve merely round personalities, and both supporters and opponents of legislation do not ask about the details of the proposed scheme before committing themselves to a definite policy. Or do they merely want to imitate other Countries without in the least profiting by the successes and failures which have been recorded ? Between one form of legislation and the other there may be as much difference as between construction and destruction.

Before independent writers rush to their pens and boost legislation or oppose some features of it, they ought to seek enlightenment on the subject. Has the Board of Agriculture any definite scheme under consideration ? Has the British Beekeepers' Association or other leading Societies a special programme that merits adoption ? There is no wisdom in making a non-defined request to the board of Agriculture to introduce a form of Government supervision of apiaries unless we mean to admit that we cannot offer any constructive scheme in the light of present day knowledge. The subject needs the most searching and critical examination in the Bee Press and by a representative Conference of British apiarists before pleading for the help of Officialdom.

Under the circumstances, we must admit to our correspondents, who are anxious to know what sort of measures are contemplated by the Govermnent, that we are still unable to paraphase the official statement referred to.

THE SIDE-MOVEMENTS OF THE WINTER CLUSTER.

The following notes from an observant correspondent appeared recently in a contemporary: "I have found that the cluster of bees early in the winter is to be found at one end of the combs, and during the winter they seem to move along them, that is from one end of the combs to the other, and generally keep between the same combs the whole of the time; that is, they clear the stores as they gradually move along. When they reach the other end, they have to 'go seek' their food on other combs, and if the weather is wintry there is a good chance of some winter losses. We will suppose, for instance, the cluster in November is at one end of the combs, and is 7 inches in diameter, they will have 7 inches to travel (on the Standard frame of comb) before having to move to other combs for food. Let us also suppose that this takes seven weeks, and will hold the population in comfort till mid-February (perhaps), there is still some distance to go before winter is past; but with the......16″ × 10″ frame it would be quite a fortnight later before there would be any necessity for the bees to make a move out of their winter quarters to get food. Many users of the 16″ frame have told me how well bees winter on them, as compared with the 14″, and the foregoing is what seems to me to be the reason. However, a test of the proposed deeper 14″ frame will show whether it is or not."

So much for the imagination of the writer. It is often quite true with bees accommodated in hives with non-sheltered entrances, the bees seeking those parts of the combs which are distant from the entrance. In a sensible winter hive, we have, on the other hand, noticed the cluster adhering to the centre of the comb and will often ignore the terminal parts of the stores, unless compelled, through prolonged unfavourable weather and bad wintering preparations, to remain on the same comb, with the inevitable high mortality through **avoidable starvation** which must follow.

It is not correct to assume that because one may find the front terminal part of a comb empty in the spring, whilst the back section containing some stores, whether sealed or otherwise, that this must mean that the bees were clustering more towards the front terminus and have finally moved towards the rear. If the cluster is forced to make a side movement it should be in the opposite direction. The above-mentioned phenomenon generally means that the bees have instinctly removed any stores that have been accommodated at the most insecure part of the hive, to that which is most distant from robbers. As a collaboratory evidence, one might mention the case of a small cast building on foundation. They will generally confine their wax building activities to the rears of two or three frames until they develop in strength.

Now, surely the practical lessons to be learnt from this must be:

(1) that it is more correct to **prevent** rather than to encourage the side movements of the cluster in winter;

(2) that there is no distinct advantage therefore in having long frames, so far as successful wintering is concerned;

(3) that a comb carrying a good proportion of stores, on the other hand, is an advantage; this explaining the preference given to the 16″ × 10″ frame over the present British Standard;

(4) that it is still more advantageous to have the same amount of stores accommodated in a deep but not a long comb, so as to encourage the upward movement of the cluster; and

(5) that a **free** bee space over the combs, together with adequate packing for heat preservation, are just as essential as the shape or the size of the frame, in determining successful wintering.

A FORM OF "ATTACK."

We much regret that Mr. A. Spyglass does not see in our friendly and disinterested observations under the heading of "A Lesson in Journalism" other than a form of "attack" on a distinguished leader. Such is not our practice. We would have preferred to entirely ignore this subject if we did not feel the urgency of treating it constructively, and in the friendliest spirit. We have no inclination at any time towards destructive or abusive criticism, which is no doubt an unenviable speciality that is clearly beyond our limited ability or ambition.

Apparently in haste, Mr. Spyglass has avoided the obvious conclusion, that our remarks would have equally applied, some time back, to **all** sections of the British Bee Press, and that our present **appeal** (and not "attack," as our critic is anxious to describe it) is directed to "our colleagues both in England and Ireland." Our motive in creating concord and beneficial co-operation is sufficiently clear to any impartial reader who is presented with our full statement and not with selected extracts.

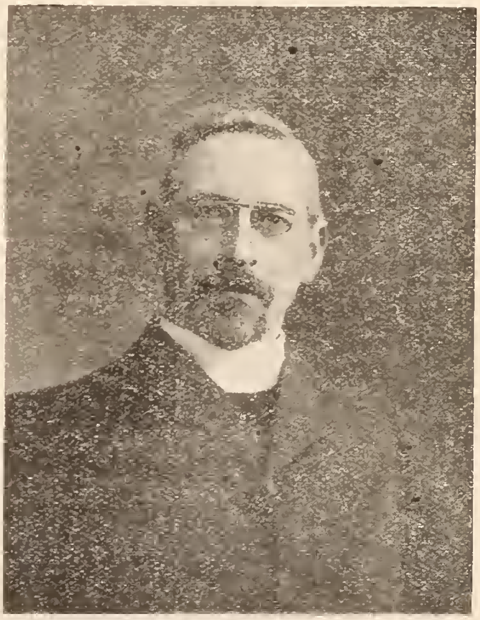
Still, we must be thankful that Mr. Spyglass has been good enough to save us the trouble of finding a reasonable excuse for our blunder, since the excuse which he charitably advances is a better one than that of our poor "English." It is simply that we are "new to the business." We shall certainly need a much longer training than that gained from twelve years of journalistic work before we can appreciate this point of view. The thankless, impartial publicity, which we regularly and enthusiastically give to the labour of our colleagues is the best reply to his strange accusation.

Original Contributions.

My Start in Beekeeping.

By the Rev. JOHN BEVERIDGE, M.A., B.D., E.B:S.B.A.

As a lad I knew nothing about bees, except bumble bees, whose nests I had harried, and whose honey blobs and stings I did know something about. I certainly knew that there were such things as honey bees and that they inhabited straw skeps and wooden boxes, and that their honey was delicious in almost any form, even as a camouflage for physic; but that was all.



The Rev. John Beveridge,
Past President, Scottish Beekeepers' Association.

When, however, the time came for me to have a house of my own in the country I began to keep bees. That is so long ago, that the event is shrouded in obscurity; in any case, it was so far back in the last century that I have no recollection of how I came to be interested in bees, or where I got them, or what I paid for them. I have a photograph of that parsonage garden a few years after it became mine; and it shows four hives, one at least of which I claimed to have made myself.

In my congregation there I had some interesting characters. One of these was a poacher. I never got him to give over poaching or to join the church; but in many respects his character was beyond reproach. Perhaps that was because he was a beekeeper. A beekeeper may be a crank, but who ever heard of one who was a bad man? In any case I never heard of him poaching on a Sunday. On Sundays he would sit among his flowers, watching his hives with affectionate interest, but he never examined his bees on Sunday, even to the removing of a hive cover; and he never handled smoker or frame, unless when, in spite of all precautions, a stock did swarm when the church bells were ringing. It is possible that I got my first two hives from him, and I am confident that it was from him I got my interest in and love for bees and taste for honey, and my first lessons in beekeeping. I could tell many interesting stories about my good friend, poacher, curler, beekeeper and kindly soul. He has long ago entered into rest. If poachers ever get to heaven, I am sure he is there, in one of the gardens of Paradise, tending with pure delight the honey bees of the Elysian fields.

But somehow I hardly think I got my first bees from him. In the neighbouring parish the minister kept a fair sized apiary and made a respectable addition to his income by the sale of his surplus honey and bees. It is very likely that my first hives came from his manse garden. I have a faint suspicion that I started with a stock and a swarm, and perhaps the swarm was a famous Sunday swarm. One Sunday morning the minister had robed himself in the manse ready for divine service. The bell began to ring, and, according to custom, he proceeded from his study past the bees to the gate leading through the churchyard to the vestry. But as he passed the bees there were unmistakeable signs of swarming. He waited a moment to make certain, hastened back to the manse, doffed his gown and sent the maid to tell the beadle to keep ringing the bell until the swarm was secured. It was a hot forenoon, and twenty minutes passed before the bees were settled on a berry bush, with a white sheet over them well sprinkled with water to keep the swarm cool. I daresay the congregation wondered why the bell rang so long that day, but eventually it did stop, and the service began. It was a red-faced perspiring beadle who carried in the pulpit books that day; but the minister seemed as cool as if he had never passed through an exciting bee experience all his days. The service was late in commencing, but it was not later than usual in closing; and the bees were safely hived at last.

When I got my bees I am afraid that I worried them a lot as many young beekeepers are apt to do; and naturally I paid the penalty. I got a veil and gloves. The veil kept the bees from my face; but the gloves kept the bees on my hands. They stung the gloves viciously and saturated the fabric with that pungent acid which so enrages bees. The gloves soon bristled with stings, and, in spite of the gloves, I got so many stabs through them that I preferred the stings to the clumsy gloves. But, marvellous to relate, no sooner had I discarded the gloves than the bees became quite friendly. Sometimes they became too friendly and crept up my sleeves to my discomfort and their destruction. In course of time I ventured to dispense with the veil also; but I was venturesome too soon, for one Saturday evening I was stung on the lip. My hands had become immune to stings but not my face; and the lip swelled and swelled until my face was all awry. When I went to bed, my mouth was twisted and there was a lump on my lip the size of a small egg. Next morning the swelling had decreased to the size of a walnut; and when the hour of service came it merely resembled a severe gum boil. No one knew the cause of the swelling except my wife, and I received much sympathy that morning from a congregation who saw certain effects, but who totally misunderstood the cause. I resolved never to manipulate bees on Saturdays after that. But the very next Sunday morning one bee left her mark on the very tip of my nose. I wept with the pain and the vexation. The previous week's inoculation, however, had been effective. I would have been a sight for the cynics, in the pulpit with a lump like a tennis ball at the point of my nose, or even if it had only been the size of a pea. But there was no swelling; and since then a bee sting does not trouble me, wherever the point of offence may come. After I had become familiar with the bees and discovered how to handle them, I was greatly surprised and delighted to find how much bees will submit to without striking back. Except in certain conditions of season and weather, my bees are almost as harmless as flies. Indeed, some of my friends declare that my bees know me, and I can hardly convince them that any good beekeeper could manipulate my hives as successfully as myself.

I once got a present of a golden queen. Her progeny was quite different from all my other bees; and I learned a great deal from that queen and her sons and daughters. First of all I discovered these golden bees apparently robbing all the hives and receiving a kindly welcome, instead of a hostile reception. I did not know whether these golden bees had a poorer sense of location than the other bees; but whilst a dark bee hardly ever entered their hive they entered the other hives freely, in diminishing numbers the further away the hives stood. And when the stocks were packed up for winter there were goldens in every one of the six hives. I knew that drones had the right of entry to other hives. But that experience taught me that young bees are also admitted without protest when they bring in a load of honey, and later they look upon the new hive as their real home.

The district in which I started beekeeping was not a good one, but it was not bad. It was a fair average for a pastoral region, and there was heather rather more than a mile off in a straight line. I had neither guidebook nor Bee Journal nor Beekeepers' Association to help me, and only my old poacher friend to consult now and then. I of course made many mistakes. I tried making my own hives and succeeded, but they were heavier, clumsier and less exact in measurements than hives should be, with the result that manipulations were apt to disturb the bees. Perhaps if carpentry had been taught to me at school, I might have managed better. I soon concluded that it is wisest to purchase hives from a reputable maker, unless one is quite expert in the use of tools. But, in spite of all, I succeeded to my own satisfaction until the bumper year of 1893 came round. In the spring I had four hives and increased to six. I harvested 315 pounds of honey in all kinds of receptacles, because I had failed to lay in a sufficient stock of sections. That experience taught me to have ample supplies of everything ordered early in the winter, so that one may be ready for all eventualities, whatever the season may be. To me it has been an interesting problem to translate swarms in terms of honey. If my four hives gave me 315 pounds and two swarms, how much honey might I have had, if I had not had these two swarms. So long as I was resident in the country, I averaged 30 pounds of surplus honey per hive. I am inclined to think that if I had not had these two swarms that year my total yield would have been 375 pounds. Then for twenty years my home was in a large town in England where beekeeping was a very different story.

I presented two of my hives to a brother minister who had shown me much kindly fellowship and friendship, and when I went to say goodbye to my brother who lived in the west I took two stocks with me in the train for him. I packed them carefully as I thought, and saw them safely in the van. Half an hour after we started the guard came along asking in every carriage for the bee-man. I responded. "The bees have escaped and driven me out of the van," he said. I hurried along the platform and, entering the van, I found, sure enough, that several dozen bees were flying about. The wire-cloth at the entrance of one of the hives was bulging a little, giving a bee-space through which bees were issuing in a quick procession. The orifice was closed in an instant. The bees in the van were as frightened as the guard and made no attempt to sting. The window was opened, and before we reached the next station every bee had found its way into the open air. The guard thought I was a brave mortal, and seemed to believe that either I had some means of charming the bees or else that they knew me as their owner and friend.

Here endeth this lesson.

ODDS & ENDS CONCERNING BEES

By RICHARD WHYTE.

THE GENESIS OF THE QUEEN AND WORKER.

On the principle of re-reading being the best reading, I slipped Tickner Edwardes' "**The Lore of the Honey Bee**" into my bag when taking a few days holiday lately. In many ways this book resembles, and outrivals, Maeterlinck's "**Life of the Bee.**" The various problems of bee life read as a romance from the pen of Mr. Edwardes. His treatment, for instance, of that ever wonderful mystery of the genesis of queen and worker from the same egg leaves one pondering over the deficiencies and limitations of our present theory of parthenogenesis.

In setting forth the wonder and the mystery of bee life, as Mr. Edwardes does in describing the physiology of the bee and the morphology of the queen, he is entirely delightful. In the hope that my readers will enjoy this part of the book as I have done, I transcribe a few passages from "The Lore of the Honey Bee":—

"The student of bee life, watching the year's work in the hive from its earliest beginnings, and marking its steady, cautious development, will readily see how the ancient idea of the mother-bee's absolute monarchy gained its vogue.

Yet the truth is, that the queen bee is the reverse of a monarch, both by nature and inclination. She possesses only the merest rudiments of intelligence, she has a magnificent body, great docility, certain almost unrestrainable impulses and passions, a yielding womanish love of the yoke, but she is incapable of action other than that arising from her bodily promptings. Her brain is much smaller than that of the worker. In a dozen different ways she is inferior to the common worker bees, who rule her absolutely, mapping out her entire daily life and using her for the good of the colony, just as a delicate costly piece of mechanism is used by human craftsmen to produce some necessary article of trade. In a word, the queen is the sole surviving representative of the aboriginal female honey bee. The aborted females, the workers, are almost as much a product of civilisation as the human race itself. Every step of the way now, in a study of the life of the bee is hedged about with wonders. It is seen that the common worker bee is raised in a cell, allowing her only the barest minimum of space for development, while the queen has an apartment twice as large as she can possibly need. The worker cells are so designed that as many as possible may be contained in a given area......but it is not only in the construction of the cradles of the worker bees that rigid economy is practised. From the moment that the egg hatches until the young grub changes into the chrysalis state, it is given only the smallest quantity of food that will support life and allow necessary development. In the case of the young queen larva, however a very different policy is instituted, from the beginning. Not only is she given nursery quarters, allowing every facility for growth, but she is loaded with a specially rich kind of food night and day, until she actually swims in it. The nurse bees are constantly pouring this glistening white substance into the cell for the whole five days of her larval existence, and the effect of this generous diet is obvious from the first in her more rapid growth as compared with the worker-bee. A further advantage still, is that the young queen has perfectly free access to the air at all stages of her development. The worker cell is but sparsely ventilated, and that only through the narrow top, all its six sides being absolutely impervious. But the cradle cell of the queen is not only made of a porous material throughout, but is commonly placed at the edge of the comb, where it stands out in the full current of ventilation, the air percolating the whole substance of its walls in addition to entering freely at the large cell mouth. Thus the main cause of the extraordinary difference in the development of the queen bee and the worker is that of treatment, the one being given unlimited rich food and oxygen and room to grow in, the other receiving only meagre workhouse diet, restricted quarters and little air to breathe.

Yet making every allowance for the stimulating or retarding effect of these agencies on the young female grub, we are still hardly any nearer to a solution of the mystery.

It would be sufficient tax on the credibility if the differences of queen and worker were only those of degree. If the queen was nothing but a large-sized worker bee in whom certain organs, which were atrophied in the worker, had received their full development, it would be a fact within comprehension, but the queen differs from the worker not only in size and the capability of her organism, but also on several important points of structure, and how can mere food and air and circumstance produce structural change? The worker has many bodily appliances, special members ingeniously adapted to her daily tasks, of which the queen is wholly destitute, while the queen varies from that of the worker in several important degrees.

Some of these must be enumerated. The abdomen of the worker is comparatively short and rounded, that of the queen is larger and longer, and comes to a fairly sharp point. The jaws of the queen are notched on their inner cutting edge, the worker's jaws are smooth like the edge of a knife. The tongue of the worker has a spatula at its extremity, and is furnished with sensitive hairs, the tongue of the queen is shorter, the spatula is smaller, while the hairs show greater length. The worker bee has a complicated system of wax-secreting discs under the horny plates of her abdomen, in the queen these are absent, nor can the most elementary trace of them be discovered. In their nerve systems the two show a difference, the queen possessing only four abdominal ganglia, while the worker has five. The queen's sting is curved, and longer than the worker's; the sting of the worker is perfectly straight. On their hind legs, the workers have a curious contrivance which beekeepers have named the pollen basket. It is a hollowing of the thigh, the cavity being surrounded with stiff hairs, and within this the pollen is packed and carried home to the hive. In the queen, both the cavity and the hairs are absent. Her colour also is generally different from that of the worker-bee, her legs, in particular, being a much redder brown.

Here is a problem for our great biologists, a problem, however, at which the plain every day man may well flinch. For we seem to have come face to face with new principles of organic life, facts incompatible with the accepted ideas of the inevitable relation between cause and effect."

THE WEIGHT OF BEES AND THEIR LOAD.

Many years ago Prof. C. P. Gillette conducted an elaborate series of experiments to determine the weight of bees under different circumstances, also the weight of their loads. The results were published in a Michigan, U.S., Bulletin. I give a summary of the results arrived at, taking averages.

There would be to the pound weight, 5578 unloaded worker bees, 3532 nectar laden bees, 5060 pollen-bearers, 5447 unloaded pollen-bearers, 5394 idlers taken on the hive fronts, 2206 drones, 10,965 loads of nectar, and 40,580 loads (the amount carried on both legs) of pollen.

From this it will be seen a worker carries in pollen about a tenth of its weight; in nectar, about one half of its own weight.

CLIPPING QUEENS AN OLD PRACTICE.

It is generally considered that the clipping of queens to prevent the losing of swarms is an American discovery. The following extract from Thomas Wildman's most interesting **"Treatise on the Management of Bees,"** published in the year 1770, makes curious reading. "If sheep loved aromatic plants, it would be one of the greatest misfortunes that could befall the farmers in Spain. The number of bee hives there is incredible. I am almost ashamed to give under my hand, that I knew a Parish priest who had five thousand hives. The bees suck all their honey and gather all their wax, from the aromatic flowers, which enamel and perfume two-thirds of the shew-walks. This priest cautiously seizes the queens in a small crape fly-catch, and then clips off their wings, after which their majesties stay at home. He assured me, that he never lost a swarm from the day of this discovery, to the day he saw me, which was, I think, five years after."

[It is no doubt a biological mystery in a sense to have the effects of diet and nursing treatment so much pronounced on the development of a Queen Bee, as is generally accepted. On the other hand, it is quite logical to assume that a special diet will act as a bio-chemical stimulus, in response to which certain organs of the developing larvæ (which otherwise would have remained rudimentary) will develop and mature, whilst other groups of cells, which go to form a set of other organs, in response to different dietetic treatment, will more or less atrophy and may not be even microscopically appreciated.

The **size of a queen** is no gauge of her quality. Some of the smallest queens often prove to be the best mothers. What appears to matter, is the proportionate development of her organs. The same principle appears to apply to a drone, reared in a worker cell. Although these remarks will be objected to on fanciful grounds, no one has ever proved, and we have no doubt no one is ever likely to prove, that a small-sized drone, which is otherwise healthy and proportionately developed, is a degenerate creature. We might equally follow the same faulty principle in gauging the qualities of a human being.

It is interesting to record that a small-sized queen may be highly prolific—her constitution being sufficiently solid to withstand the strain, and her store of spermatozoa, whether derived from a small or a large drone, being apparently liberal for her active life service. Before she becomes an aged drone layer, her laying capacity will fail, and as a rule, she will not then escape supersedence by the bees. A two years' active service may be safely depended upon.—Ed., B.W.]

Selective Queen Mating.

By JULIAN E. LOCKWOOD.

(Expert to the King's Lynn & District, Mid. & West Herts. & Hertford, and to the Ware & District Beekeepers' Associations.)

I am afraid that too little attention in the past has been given to this subject, and I believe I am right in saying that nine out of every ten beekeepers give no attention whatever to the improvement of their queens, and just simply allow the bees to rear their own queens under the swarming impulse.

There is not the least doubt that queens reared under the swarming impulse are of the very best, but the point I want to draw to the notice of your readers is the great importance of getting queens mated by selected drones.

I have proved myself beyond doubt that the progeny of a queen is considerably influenced by the parent on the male side, and it is generally admitted that the temper is derived from the male. I feel convinced that, if more attention was given to selective breeding and mating, our trouble with Isle of Wight disease would, to a great extent, disappear.

I know of many beekeepers who rear their queens by selection, but just simply trust to luck as to how they are mated. This is worse than useless, for no matter how good the queen may be, she will be more or less useless unless she is mated by a drone from selective stock.

Julian E. Lockwood, Esq.

The noted apiarist of Hunstanton, Norfolk, who has finally given up the gas mask and the rifle for the veil and the smoker, after sustaining serious wounds in several campaigns during the Great War.

I must admit that to rear selected and tested queens requires very great skill and much hard work and would hardly answer the purpose of a beekeeper with 3 or 4 stocks. To the small apiarists I should say: "Buy your queens from some reliable breeder."

The question now arises how can we secure, say, 75 per cent of queens properly mated. Every beekeeper will admit it is quite an easy thing to rear queens from this queen or that queen, but not such an easy matter to get them mated with the selected drones we have reared.

I will now give a plan that I followed with great success before the War and whereby I got over 80 per cent. of Italian queens mated properly, though mine were the only Italian bees in the neighbourhood. In the first place, the stocks required for drone rearing are selected and removed to a site about a mile from the apiary. These should be strong stocks that have shown desirable qualities, i.e., good honey gatherers, long lived, and good tempered, not to mention that they have proved themselves immune to disease. When these stocks are fit to receive supers instead of putting on shallow frames of worker comb, give them a shallow frame rack with ten frames of drawn-out drone comb. The result will be that the queen will rapidly fill this shallow frame box with drone comb; and if another is placed underneath, this will be served the same. The result is that, in 24 days from the laying of the eggs, we shall be having drones hatching by the thousand and not by the hundred and these will literally swamp the neighbourhood.

I have found that if the drones are reared or taken about a mile away from the apiary where the queens are kept in their nuclei, you stand a 50 per cent. better chance of getting the queens mated by them than when the queens and drones are reared in the same yard. It seems a natural tendency for a queen to look outside her apiary and by having your drones some distance off, it places them on a better footing than those in the same apiary as the queen.

Of course all drones from other hives not required should be suppressed as much as possible, and if these stocks attempt rearing drone brood it should be destroyed as far as possible. Drone traps can be used, but I always think they do more harm than good in a large apiary. There is not the least doubt that, with the advent of the Aluminium honey comb and the Metal foundation, it will greatly help the beekeeper in restricting the raising of drones from undesirable hives.

The great point we have to bear in mind is that, in order to get queens properly mated by selective drones, we must literally flood the neighbourhood with our special drones, so that they out-number the undesirable ones by at least ten to one. The great difficulty the beekeeper has to contend with are neighbours' hives, and bees in trees, as these bees often account for a lot of cross-mating, which generally produces undesirable stock. Another point that must not be overlooked is that all stocks used for queen or drone rearing should be abundantly strong and have ample supplies of honey in the brood nest. In rearing queens, hives should be got to as near the swarming point as possible, as they are then just at their best for rearing the very choicest queens. I have found that weak stocks invariably turn out poor queens.

I have limited myself to the question of queen-mating, but at a later date hope to deal with the various ways of rearing queens by the latest scientific methods. I do impress upon all beekeepers to pay more attention to the rearing of their queens, so as to improve the stamina of the bees in the Country, when I feel sure that we shall have fewer complaints about losses through the Isle of Wight disease.

[We attribute Mr. Lockwood's success to quite a different factor from that which he gives as an explanation. Our repeated observations lead us to the opinion that it is an **unnatural** tendency for the queen to look outside her apiary for the drone. We have already pointed out that the wisdom of Nature is to preserve the race at the risk of in-breeding, and afterwards to leave the fit to survive and the unfit to perish. Thus Nature is both constructive and destructive. A colony preparing to swarm breeds a comparatively large number of drones. What for is their existence if not to attend to the young princess or princesses that have to succeed (within the hive or outside it) the departing mother? It is true that drones migrate, and are most welcome to queenless bees, and to nuclei headed by virgins. Marked drones may be located a long distance from their original hives, in alien ones, in which they have settled whether temporarily or otherwise, and for some reason or the other. Mr. Lockwood has therefore most correctly applied this knowledge. We have no doubt that his drones travel from his out apiary, (which for convenience may be termed the **drone-breeding apiary**), to the **queen-mating apiary**, which is principally stocked with nuclei headed by virgin queens. It is a brilliant trick which answers the purpose when dealing with just one strain of bees. It is not truly controllable, but it is workable and economical.

We said that it is an **unnatural** tendency for the queen to look outside her apiary for the drone. Our main reasons are as follows: (1) Anatomically, the queen has a comparatively poor brain and we can hardly imagine her fit for a lonely long trip, which is almost equivalent in taxing her brain power to the journey of a foraging bee. (2) Habitually, the queen, whether fertile or otherwise, has never been seen, so far as we are aware, to leave the hive alone for a long distance and yet as a rule to return safely, even when her particular hive is carefully marked. We all know that a swarm despite the presence of so many attendants with the queen, usually follows her inclination for a short distance flight to begin with, and when a long distance flight is undertaken, it is not a rare exception that the queen is lost. The mating of queens, in our experience, takes place at no special time. It is often missed therefore, especially when no close study is maintained, and when occurring at a high altitude, though the latter occurrence is not frequent. On the other hand, it is often observed, though curiously enough not appreciated, when a cast leaves the hive with a virgin queen and finally returns. We would call this a **mating cast.** The return of the bees is generally explained as due to the queen not leaving the hive (although a true cast may never issue afterwards); whilst if a following cast finally issues and never to return, the fact that two virgins, at least, were originally in the hive, and that one of them was finally turned out instead of being killed, is lost sight of: (3) even where fertile queens have been seen to leave their hives (other than under the swarming impulse)—and this has been seen in one instance by two of our assistants, and has also been witnessed by others. The queens invariably circle round their hives for a very short distance, and then quickly return to their homes and rarely after resting on a neighbouring object such as a tree or a wall. It is possible therefore, as has been suggested to us by our colleague, J. H. H., that the mysterious disappearance of queens, when no robbing or drifting of strange bees or supersedence would account for it, is due to the queens losing their way back to their respective hives after such adventures.

In short, we have generally observed that (1) the bees belonging to a mating queen—whether drones or workers—are most interested in her mating trip, and the least the workers do is to fan enthusiastically at the entrance, whilst the drones keep going in and out of the hive for some time; (2) the mating drone will not necessarily succeed in reaching the platform of the hive before expiring, this being often the exception; (3) a queen will not fly for some distance outside her apiary unless obliged to do so, and generally a long flight means her loss; (4) the mating of a queen with a drone from her own hive does not necessarily mean in-breeding, since he may be an adopted brother instead of a true one, but this is a matter of chance which the scientific apiarist can hardly rely upon.

Mr. Lockwood's notion of a special **drone-breeding apiary** is certainly an excellent one for its sphere of utility, as we have already indicated.—Ed. B W]

Portuguese Apiculture.

By G. B. MITCHELL.

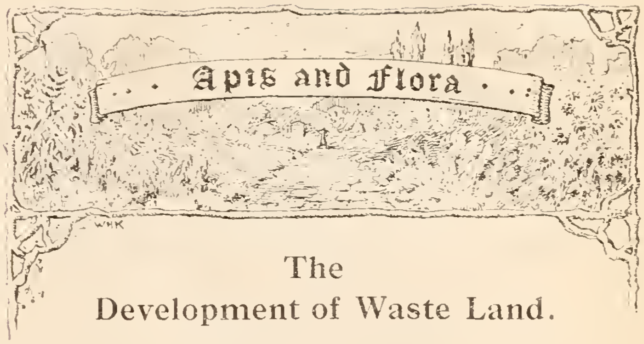
Beekeeping in Portugal is still a primitive craft. There is therefore very little to say about it. Most Portuguese apiarists are uneducated people, who cannot even read or write. They are entirely satisfied with their ancient methods, and do not seem to think that there is any need or possibility for improvement, with the exception of one man who always seems trying experiments. He has 21 movable frame hives; and, as he makes them himself, he produces all sorts of patterns. He has Dadant-Blatt, Berlepsch, two or three Portuguese models, and two or three of his own invention, besides as many more cork and box hives. It is a weird collection. He tells me that he is making the hives and frames smaller, as he finds he can never get a queen to fill a big hive with brood. This agrees with my own experience, since I find the bees here are not prolific.

There are **two distinct strains of bees**: (1) the small black bee, and (2) the larger brown. The black is more prolific than the other. I imported one of Penna's queens on July 17th, and introduced her to a nucleus, though this was far too late, as the honey flow was long over, and the other colonies had expelled their drones before this. Still, they managed to build up, and are now one of the strongest stocks which I possess. I tried to re-queen with her daughters, but I failed to get them mated. However, I am sure by this experience that I shall do better with Italians.

The **honey harvest** here has been good this year, in spite of the terrible drought which has lasted since March; but the average yield per hive is very small, which I suppose is not to be wondered at, considering the smallness of the hives and swarms.

Portuguese apiculture is indeed far behind the beekeeping standard of most other European Countries. It has in fact seen no modern development whatever and sadly lacks some progressive leaders—people of education and open mindedness, who are prepared to study international literature and to introduce to their Country the best methods of other beekeeping communities that would suit Portuguese conditions. At present, practically the whole craft is illiterate. Neither science nor experience guide their methods, but merely tradition and superstition. It will be a thankless task indeed for any reformer here to introduce new ideas and methods. He will never escape ridicule, and will have a very hard fight to do before making any impression, since everyone is satisfied, and people will generally dislike to be awakened from their happy dreams—the dreams of satisfaction and content, however hopeless their position may be. Dr Rocha d'Amonin whom I believe to be the most advanced beekeeper in Portugal, forms with his disciples quite a small section of progressing beekeepers here. Their number, however, is so small that one might as well not count them. Unless the Portuguese Government will follow the example of the British and American Governments in encouraging the development of beekeeping on modern lines, for the national sake of increasing food production, and of bettering the economical conditions of the Craft, especially by fostering international ties, so as to find profitable outlets for Portuguese honey as well as to create serviceable inlets of foreign education, it will be many years before the beekeeping industry here will see the light of a better day.

[In the August issue of THE BEE WORLD, page 54, our readers will find an earlier and equally interesting contribution from Mrs. Mitchell on beekeeping in Portugal. The description given of the backward state of beekeeping in that Country would equally apply to many other lands, which are not necessarily more advanced in other branches of their Industry or in general education. The only remedy is the free international exchange of knowledge, coupled with the aid of the State, at least as a temporary [illegible]. But unfortunately it is rare to find even a democratic Government adopting an original national policy of industrial education, unless obliged to [illegible] through the pressure of public opinion. Governments, like individuals, are [illegible] when left to their own sweet wills—to avoid additional worries and responsibilities.—Ed., B.W.]



Apis and Flora.

The Development of Waste Land.

By A. F. HARWOOD.

Many a beekeeper, surveying a piece of waste ground, has said to himself: "what a pity that this doesn't bear forage for my bees."

The object of these notes is to offer some suggestions in the direction of utilising such waste spaces.

An infinite variety of sites presents itself, and a corresponding variety of treatment is indicated. Railway embankments and cuttings, wayside strips, commons, heaths and moors, margins of streams and ponds, unused or derelict building plots, dumps and scrub-covered land can all be made to blossom for our workers.

There are many hardy annuals, seed of which is inexpensive, such as Limnanthes Douglassi, Shirley Poppies and others, quite capable of taking care of themselves once scattered over the soil.

So too, some of the biennials, e.g., echinops medium, Syn: **ech. sphærocephalus**, Chapman's Honey Plant, broadcast will spring up and line hedgerow or bank with tall stems, crowned with the globular heads so beloved by bees.

Among perennial subjects, **epilobium**, American Willow Herb, known in "The States" as Fireweed, is a great honey producer and spreads rapidly wherever it once gains a hold.

For near-by spaces, a method I have practised with much success, is that of using discarded portions of the root clumps from herbaceous borders. Perennial sunflowers, Golden-rod, Michaelmas Daisies, Chrysanthemum ulighinosum, various Campanulas, heleniums and similar subjects, together with single arabis, Calycinum, (St. John's Wort) and other quite hardy plants may be left to themselves in the sure and certain hope that they will increase and multiply without attention.

In the case of a common, it is quite easy and simple in practice to go over it and broadcast white clover seed, either alone or in mixture with a small percentage of alsike.

Conscientious objectors to "interfering with nature" may raise their voice against my next suggestion. Barren moors and unenclosed uplands, that at present are mere bleak, bare expanses of ungrateful desert, may be brought into bearing and profit by a method which is, after all, only an extension of a "natural" means of plant distribution.

One often encounters isolated specimens, or even clumps of fruit bushes, such as raspberries, currants, gooseberries, etc., in places whither, it is practically certain, they have been transported, in the seed stage, by birds.

Many a time, on my tramps, I have taken ripe seeds of subjects such as gorse, broom, kidney-vetch, alsike and others "too numerous to mention," and scattering the small ones, have planted the larger leguminous ones with the aid of my stick, a quite sufficient operation in soils such as one finds on breezy uplands and springy downs.

Railway Companies are beginning to plant the embankments and cuttings with fruit trees and bushes, a movement that should be strongly encouraged, special attention being directed to such berries as are least attacked by birds, such are Loganberries, Himalaya Berries and Parsley-leaved Blackberries, admirably suited to these positions, prolific, fine for preserving, of robust constitution and vigorous growth.

Cherries, save Morello, and gooseberries are unsuitable, birds eating the former and pecking out the buds of the latter.

Strawberries could be tried with advantage, being allowed to "mat," thus serving as a surface binder for the embankment slopes.

The Press Mirror.

The British Bee Journal.

BEES AND BEEKEEPING IN JAPAN.

By Yasuo Hiratsuka.

[Editor of **Yo-ho-no-Tomo** (The "Friend of Beekeepers"), a Japanese bee magazine, issued monthly by the **Japanese Beekeepers' Central Association.**]

1. The Japanese bee (Apis Japonica) is a sub-variety of Apis Indica, or Oriental honey-bees. It is a Japanese native, if not original, and came from the Continent hundreds of years ago. For hundreds of years it was wild. Then it was kept by men in some localities. Of course, it was kept in a kind of skep that was a box, or barrel, used for any other purpose. Some years ago those who learned apiculture in America, or Europe, commenced with frame hives, although bees are yet mostly kept in a non-frame box or barrel.

The Japanese bee is black in colour, having whitish bands round the abdomen, rather small in size, quick in motion, does not propolise at all, a fine comb builder, little swarmer, good winterer. What will be interesting to you, it fans at hive entrance away from head or in opposite direction to that of European bees, and does not cross with European bees at all.

Its motto is "safety first," from the large Japanese hornet, whose great damage was stated in the **Gleanings in Bee Culture**, December, 1918, by me, while European races of bees are attacked so badly, because they came out to fight, while the former hides away from the hornets whenever they come to the hive entrance.

2. The Carniolan was imported from Mr. Benton some 30 years ago, and from Austria years after. It is quite "out of our love" at present, because of its swarming impulse, although it is yet kept so well by our fellow bekeeperse in cooler regions.

3. The Italian, three bands, golden, and a race of Mr. Sladen's bees, are making their way so well.

4. Other races of bees as Cyprian, etc., are gone away, although we had them years ago.

We use the 10 or 8 Langstroth hive. In short, our bee culture is some modification of American bee culture. We would like to learn more from your beekeeping.

The Australasian Beekeeper.

AS BAD AS ECHINOPS!

Several suggestions have lately come to me, probably emanating from the one quarter, that **Pepper trees** were detrimental to bees. I have never experienced any trouble. I sleep out within 30 feet of a row of pepper trees every night, and at daylight, every morning, the bees are usually making a great roar on the trees, and they work almost continuously on the bloom during favourable weather. I have had swarms settle on these trees and yet have never seen a dead bee about the tree. [Even a dozen or more dead bees, from accidental or natural causes, will not affect the weight of this evidence.—Ed., B.W.] If the trees gave off poisonous fumes, the bees would be dead around the trees and I would have detected the fumes.... If a rumour gets started, there will always be a doubt raised that will prevent the planting of this useful tree.

I have been frequently told that the **poppy flower** produces a poisonous honey. It is not necessary that because opium is secured from the juice of a variety of poppy that the nectar also contains opium.—W. S. Pender.

The New Zealand Beekeepers' Journal.

ECONOMICAL QUEEN REARING.

A critic from Pukeuri remarks: "I quite agree with Mr. A. C. Miller that swarm impulse queen cells are just as good as any cells, and one thing that I am surprised at, is that so many beekeepers go in for buying queens. Surely it is simple enough to raise queen cells, even though you are very busy. I will tell you the way I do it. In the middle of the day when the bees are very busy, select one of your most powerful colonies, and, having a super, roof, and bottom board with frames fitted with foundation—as I said, when they are **very busy**, lift the old hive completely at least a chain away, or, if a small place, away as far as you can possibly get it, putting the new hive in place of the colony just moved. Now select one or two frames from one of the best Colonies you have got with eggs and brood, and place them in the bee hive where you shifted your colony from; and the working bees returning home and finding their hive gone, will set to work and draw out your sheets of foundation, and a nice lot of queen cells also, in about eight days.

If you really want a large number of cells, remove the frames from them, and give to another colony that will take care of them, and give them another frame with eggs and brood, and then you will get plenty of cells. **I would not advise beginners to do this until the swarming season has begun,** as they may for one thing, not select a hive that is strong enough; and another reason is that at swarming time the bees generally are not very much inclined to rob."

[We cannot too strongly condemn this method of queen-rearing, much as it is practised by that section of the trade in every Country whose greatest pride is the **number** of queens they raise by such a demoralising process, and the amount of money which they can realise by selling such "scrubs," to quote Mr. Pritchard's expression (*). The quality of their product is not worth their consideration.

The finest queens are those raised under the impulse of **swarming, supercedence,** or **independence.** Under one of these impulses the bees elaborately build the cells, liberally feed the larvae, and excellent queens (and not "scrubs") result. It is not a question of size but of perfect maturity and excellent constitution that helps the potentialities of the organism to appear instead of hampering or destroying them. By one way of persuasion or the other, modern queen-breeders with **artificial methods** fairly manage to induce the bees to build good-sized queen cells and to liberally feed the larvae. These may or may not be as good as naturally reared queens. It is a matter of experience in selection and management on the part of the breeder.

When we quote notes on this orthodox method of queen-breeding practised in New Zealand, we do this from an international point of interest, merely for comparison and reflection.

When we experimented with the same method, we were struck by the panic-stricken demeanour of the bees, who built the queen cells haphazardly. Amongst the hatching queens, to our amusement were **drones and workers!** This is an exception, however, but the poor quality of the queens is not an exception.

Fresh queens are bought from reputable breeders for the sake of introducing new blood for eliminating in-breeding, and for championing a better strain. If these qualities cannot be secured, re-queening is no less than a foolish loss.—Ed., B.W.]

Bee Craft.

FRESH BLOOD.

We cannot all specialise in queen-rearing, and if we could, our strain of bees may not be worthy the necessary trouble. To depend on the maintenance of a good strain by leaving nature alone, is trusting to luck, and to depend upon the improvement of a strain by the chance fertilisation of our young queens by the drones from the apiaries of our more progressive neighbours, is unreliable and unsatisfactory. In bee breeding, as in breeding other live stock, fresh blood should be imported periodically, and when doing this we should take such steps as are available to secure the best our pockets can afford.

It must indeed be a small apiary where it is not worth while to import each year, one new queen during the period June-August. To buy a nucleus which can be rapidly built up is infinitely the better course to adopt, as the risks attending introduction are eliminated, and the addition of a frame of sealed brood, as the bees become strong enough to cover it, will make a weak nucleus into a good strong stock in a very short time.

(*) THE BEE WORLD, August 1919. p. 52.

The Canadian Horticulturist and Beekeeper

PUTTING BEES IN CELLAR.

By J. D. Evans.

My system of putting bees into the cellar is very simple. My hive bottoms are fastened to the hives with staples and never loosened. My quilts are sealed fast to the hives. My entrances are one and one-half inches high, and the full width of the hives. This I have found all right in my cellar during the twenty-five years I have wintered bees there. The entrance block is two inches wide and one inch thick, and as long as the hive is wide and is kept in place by a picture nail. All my man has to do is to remove the cover and shove the entrance block across the hive, so no bees can get out, pick up the hive and carry it into the cellar. There are no steps to go down. The bees are piled on an old half-storey hive—five in each pile. An entrance block is placed under the first hive on the stand at the back, so as to tip the hive a little to the front.

That is all there is to putting the hives in the cellar. My man will carry them all in, and pile the covers in the honey-house, in one day and be done early (123 hives). The entrance blocks are removed each time a pile of five hives is completed.

Gleanings in Bee Culture.

THE FAILURE OF THE McDONALD COMB.

In the September issue of our leading contemporary, Mr. J. E. Crane writes : " When I opened again the hive having the aluminium comb, I found it well stocked with brood. It was put in so solid it looked pretty good, and, in my enthusiasm, I felt like throwing my hat 20 feet high and shouting—but I didn't, for I am a quiet man. When I looked again I confess I was a little disappointed, for the brood did not seem nearly so compact. There were many cells where the brood apparently had been removed. Fully one fourth of the cells, I should estimate, in the space occupied by brood were empty. Nearly all the cells of the two rows on each side of the upright wires that hold the comb in the frame had failed to mature any brood. I have examined it again to-day, and find brood in all stages, and considerable capped brood maturing but somewhat scattering—quite too much so. One comb in one hive is not enough for a very thorough test of the value of these combs ; but it is highly interesting to watch developments."

[We are surprised to find the editor of **Gleanings** permitting these notes, which are calculated to injure the popularity of one of the finest beekeeping inventions of modern times, to circulate freely in two hemispheres, through the medium of his popular magazine, and not a word of comment from his pen. Can Mr. Crane offer any reasonable suggestion why the brood should not mature in metal combs ? We have no hesitation in giving a negative answer. The fact of the case is that the queen has either never laid in the cells to which he refers or that the brood has already emerged. In the latter case, the colour of the cell wall will be sufficient evidence. In the former case, the observer will note that the base of the empty cell has not been filled with wax by the bees or has just been filled recently. We would refer our readers to our comments on illustration No. 12 on p. 55, in the August issue of THE BEE WORLD. We have yet to find bees working on the McDonald comb, taking much notice of the cells in the line of the suspension wire. But do these count ? Is this any argument that the wax foundation is superior to the metal comb? And if not, why not give the latter its great share of credit and offer suggestions for its improvement instead of dogmatic criticism ? Needless to say, once the bees have filled the bases of the cells with wax, the queen will never refrain from laying. At a little cost this wax filling can be done artificially beforehand, but frankly we do not consider this quite necessary. The bees will see to it in their economical way.

We have criticised in the most impartial manner this brilliant invention after severe and repeated testing, and not in the absence of controls, and we have no hesitation therefore in repeating that its **only** practical defect lies in its comparative weakness. No consignment has reached us from America which did not suffer a form of injury, but it is a matter of a greater care in shipping and in handling. Furthermore, the distinguished inventor of this excellent hive equipment cannot be imagined to lack the ability to improve it as experience will dictate.

Probably it would be fitting to quote what another American writer, Mr. Charles S. Kinzie, says on the same subject in the September number of **The Domestic Beekeeper.** He used six Langstroth combs to hive a swarm on. He comments as follows : " Forty-eight hours afterwards I looked at them and found two combs filled with eggs and full of honey." With a brood chamber containing three aluminium combs, three full sheets of foundation and three wax combs, he found that : " in the aluminium combs there were as much eggs, pollen, and honey as there was in the wax combs. The full sheets of foundation were only drawn out a little, and contained a few eggs and no honey."

Both writers did not refer to the " repair " by the bees of the cell bases. This takes very little time, and of course is never done until the cells are actually needed. The queen only **temporarlly** avoids laying in the new cells until they are perfected. A cell may be missed here and there, but they are ultimately attended to,except in the lines of the suspension wires, the indifference towards which may not continue, but these make an **insignificant** difference.—Ed., B.W.]

The American Bee Journal.

BEHAVIOUR OF QUEEN.

By Kennith Hawkins.

In long and continued observation of colonies in observation hives, I have repeatedly observed an action on the part of the queen which I am beginning to believe may cause swarming at times when it is not easily explained. You know bees sometimes swarm out and leave brood behind, shortly after hiving, or at times swarm with queen-cells only started. This has always been puzzling.

Observation of a queen here in a weak one-frame nucleus shows her repeatedly searching for empty cells, which in her case, are only found **outside** her small cluster. She wanders off, usually alone, poking her head into these cells, but **not** laying. Frequently I have seen her go too near the entrance. In doing so she flutters her wings, probably making some sound which I cannot hear, but which **immediately arouses the entire cluster so that many of them rush toward her.** Once I saw some of the bees **rush outside the entrance,** while others headed her off and actually seemed to push her back, with their antennæ toward the cluster.

Might not such wanderings on the part of a queen be the cause of some of our inexplicable swarming under abnormal conditions ? I believe it is, when she wanders too close to the entrance and may be seized with a desire to try a flight. Anyway, I give you the observation for what it may be worth.

[The writer of the above notes is both a good observer and judge. He quotes a trustworthy authority, namely the observatory hive. So far as the fluttering of the queen's wings is concerned, we know that under such conditions it produces quite a distinct sound. On releasing an American queen (which travelled three weeks and was further confined for 24 hours over the combs of a weak queenless nucleus, well prepared in advance for her reception), she was good enough not to attempt flying and stately walked over the comb ; then she stopped and fluttered her wings transversely and afterwards longitudinally (that is, upwards and downwards in relation to her body), in both cases producing the familiar queen sound. The call attracted several members of the household, who affectionately started to greet her with their antennæ. The queen with the crowd then moved a few steps, and repeated the same performance. We had then more important work to do than indulging further in our amusement and study ; and we were obliged to close the hive earlier than we should have done otherwise.

Whether accidentally or intentionally, there is no doubt that the queen is responsible by her independent and restless action for the issue of a swarm under certain conditions, and is often much responsible, if not solely causative, of the decamping of a newly hived swarm, as we have already remarked in a previous issue.—Ed., B.W.]

The Beekeepers' Gazette.

EXPERIENCES IN FRANCE AND EGYPT.

By A. Spyglass.

You will want to know whether I have seen any bees and done any beekeeping. Once I came across a sergeant and a corporal messing among some overturned hives in what had been a French farmer's garden quite near to the front. Shells were crossing, and some were bursting not far to the east of us. The sergeant told me that he had leave to carry the bees back to a rest camp, where he was giving instructions in beekeeping to some of our fellows. A shell had upset the hives, but they were being put right, and on a roof of them I noticed an open book, which seemed to have some familiar features. It was the Guide (†), the only guide, much thumbed, and looking in every way the worse for wear. The sergeant proved to be a British disciple of yours, and he was delighted when he heard that you and I are old friends. What a singular meeting in such surroundings !

In Egypt, I saw some of the old-fashioned earthen hives. They were on the Nile, the owners moving them up to pastures new. My inquiries did not fill me with admiration for the Egyptian bee. They are cross, unfit to withstand a cold winter, very fond of drones and laying workers, yet they have been recommended for import to this Country ; but then I did not come across any that were being managed on modern principles.

In Mesopotamia, there were none that I could see. Indeed it would be difficult for bees to thrive in such a desolate land.

[Mr. Spyglass bases his verdict on the Egyptian bee not on grounds of personal experience, but on hearsay. We need not add much here to our previous comments. Egyptian beekeepers of the old style are full of superstitions. Just as some bee-

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(†) The writer is referring to **The Practical Bee Guide** by the Rev. J. G. Digges, M.A., Editor, **The Beekeepers' Gazette** and **The Irish Bee Journal.** For review see the June number of the B.W., page 18.—Ed., B.W.

keepers in England will assure you that beekeeping is a special gift, or is the fruit of no less than a quarter of a century's connection with bees, and is a family inheritance, and the like, so the old fashioned Egyptian apiarist is fond of telling the old story of the divine nature of beekeeping, and will do his utmost in discouraging others from keeping bees. He needs much education and guidance. And it is to be feared that not all the comparatively few modern apiarists in the Nile Valley are avoiding these traditions.

The reasons which have justified recommending the Egyptian bee for import to this Country have not been critically examined by Mr. Spyglass, and it is difficult therefore to answer his general comment.

As for **fertile workers,** we have yet to hear a striking criticism of the view which we hold that fertile workers represent a further division of function in a highly organised bee society, and therefore do not by any means suggest a degenerative race. No one has proved that a drone from a fertile worker is not so perfect as one from a queen ; size alone will not count.

Then again, the question of **maintaining the drones** all the year round can hardly be considered a disadvantage for a highly prolific race, especially during the cold season. Is the food ration for one or two hundred drones (at the utmost) in winter such a serious question, even under the present exceptional circumstances? Do they not generate in return a much desired animal heat for the mutual protection of the cluster? Is the maintenance of drones during the autumn a disadvantage should one be in a pressing need for the mating of virgin queens? Is the appearance of drones early in the spring again to be deplored? No doubt the excessive presence of drones during the honey season may lead to undesirable swarming. But here lies the line of demarcation in management between the beemaster and the beekeeper.—Ed., B.W.]

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The publicity which has been given to THE BEE WORLD in the Daily and Agricultural Press has brought to us several enquiries from beekeepers who are now anxious to know the address of one bee magazine or the other from which we have quoted. Most enquiries relate to the Home Bee Press. Curiously enough, nothing more than the brief or occasional apicultural notes of one agricultural magazine or the other has been guiding our correspondents. If the standard of beekeeping in Great Britain has to be efficiently raised, lovers of bee culture should do their utmost to popularise and develop the bee literature of the Country. We have no commercial interest but rather a financial loss in this labour of love, and we have much pleasure therefore in maintaining our lead in this practice, irrespective of the ridicule and ingratitude of those who have been trained to propagate a feeling of personal and commercial partisanship in literature. The following is a brief guide to the Home Bee Press :

(1) **The British Bee Journal.** Weekly ; 10/10 per annum, post free. Published at 23, Bedford Street, Strand, London, W.C.2. The Journal is edited on lines which are naturally different from those of a monthly magazine. It is full of practical hints, and deals mainly with topical questions.

(2) **The Beekeepers' Record.** Monthly ; 2/6 per annum, post free. Published at the above-mentioned address. The conspicuous feature of the Record is its elaborate treatment of the apiary work. It further gives a complete record of beekeeping patents, and useful inventions.

(3) **The Beekeepers' Gazette** and **The Irish Bee Journal.** Monthly ; 2/6 per annum, post free. Published at Lough Rynn R.S.O., Co. Leitrim, Ireland. The Gazette is intended for circulation in Great Britain, whilst the Journal is issued for the benefit of Irish beekeepers. The literary contents of both are practically identical. Both are well edited, and deal with more than the practical side of beekeeping.

(4) **Bee Craft.** Monthly. Published at 18, Kingswood Avenue, Chatham. Issued only to members of the Kent Beekeepers' Association, one of the most powerful and progressive beekeeping organisations in this Country. Membership of the Association is not limited to beekeepers resident in Kent or any other locality, and the membership fee is small. The Hon. Gen. Sec. of the Association, from whom full particulars may be obtained, is Mr. G. W. Judge, of Barrowdene, Shepherds Lane, Dartford.

We have already remarked that size alone does not count in journalism ; and we have often been delighted by reading some tastefully produced numbers of English and Irish bee publications before other bee magazines. Not many beekeepers cannot truly afford to subscribe to all these periodicals, which are bound to be supplementary to each other in usefulness.—Ed., B.W.

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Proceedings of Associations and Clubs.

THE DEVELOPMENT OF THE APIS CLUB.

The international war relief work of Leon Tombu, the noted Belgian apiarist, who presided over the Brussels International Beekeepers' Congress in 1910 and is now organising the 1920 Congress to be held in Rome, should not come as a surprise to the British Bee Community in regard to the gratifying development of universal brotherhood amongst beekeepers. The surprise lies in the fact that whilst the British people as a whole are taking a leading part in the development of the political and humanitarian idea of a League of Nations, and are endeavouring to enforce it by economical and educational means, British beekeepers by themselves have, generally speaking, remained in seclusion, and are not sufficiently alive to the importance of fostering scholarly and economical ties between themselves and other communities interested in the beekeeping industry.

For the first time in the history of the British beekeeping movement, an educational and research scheme of an international character has been created with the only aim of placing it finally under the democratic control of the beekeeping organisations of the Country. Not only would the scheme be handed over free from any liability, but with a substantial financial assistance from its original organisers. It is regrettable, however, that apart from creating much gossip, no voluntary step so far has been taken by our associations to avail themselves of the offer, which includes the effective control, for no commercial gain, of this magazine.

Objects of the Apis Club.—The aims of the Apis Club may be thus summarised : (1) the educational and practical development of Modern Bee Culture in Great Britain, both independently and by co-operation with existing societies and institutions ; (2) the stimulation and conduction of research work in bee culture ; (3) the creation of International Scholarly relations amongst progressive apiarists in all Countries ; and (4) the general popularisation of beekeeping in Great Brtain by co-operative material assistance.

To put these aims into practice the following steps have been taken : (1) the establishment of THE BEE WORLD as an educational medium with a foremost principle of co-operation and impartiality ; (2) facilitating research work at the experimental apiary of the Club to all studious members and capable workers ; (3) bringing to light the work of beekeeping communities abroad, and furthering the exchange of knowledge, which in itself is a means of fostering international brotherhood, apart from the developing a beneficial international trade in bees, bee product and implements, not least in gaining by this policy being British apiarists and manufacturers ; (4) securing for members of the **Apis Club** bees and appliances of good quality at a special discount. As regards bee supplies for the 1920 season, for instance, we are inviting, to begin with, all apiarists who could give as a reference the testimonial of an official County expert, or that of the editor of one of the English or Irish bee magazines, to apply to the Secretary of the **Apis Club** for orders from members, at a discount of ten per cent., in consideration for saving on business commission and advertising. Already we have applications, from **other** than our advertisers, of bees to be supplied on combs built on either metal or wax foundation, and at an earlier date of supply than the latter. We shall be happy to give names to any members on receipt of a stamped addressed envelope. We shall also be pleased to receive additional applications from other apiarists giving full particulars of their goods, together with a reference, and undertaking a 10 % discount on their standard prices to members of the **Apis Club** for goods of the same quality, whether in the shape of queens, nuclei, or stocks. The same invitation is extended to manufacturers at a proposed discount of 5 %. It is optional to these apiarists and manufacturers to support the Club or otherwise, according to the extent of their gain. Obviously we cannot assume any personal responsibility regarding these business transactions, although of course we shall not hesitate to erase from our list the names of those apiarists or manufacturers against whom irregularity is proved.

Constitution of the Club.—It is a logical aim that the Club should develop **independent** of the fostering of a single association, or a single business house. And to fully achieve its aims, nothing short of the immediate co-operation of all the beekeeping organisations of the Country, as well as of the mass of the Trade, is needed. It is not for us to suggest which Association or Business House should take the initiative and lead in this direction. We do not care to embarass any one. The humblest association may be quite capable of this lead, provided the qualities of enterprise, sincerity of faith, and moral courage are not lacking.

Membership of the Club.—This is provisionally open to anyone willing to support its objects. An honorary **fellowship** (apart from scholarships) should be constituted for distinguished researchers, so as to encourage experimental work aiming at the advancement of beekeeping. But clearly, it is not for the provisional organisers of the Club to lay down rules and articles of Association. Their function is to safeguard the existence of the Club, and to create a powerful co-operative organisation which should democratically choose its own rules as well as its officers and headquarters. Suffice for the organisers at present to guarantee the members against any liability other than their membership fee and what they choose to contribute to the Research Fund of the Club and the Educational Fund of the Bee World.

The Maintenance of The Bee World.—As we have already remarked in a previous issue, even if the present membership fee of the Club were to be doubled, one shilling and threepence monthly is not a big problem for the small holder nowadays. Considering the cost of THE BEE WORLD, even such a sum (irrespective of the advantages of the Club membership) does not represent a loss to the member. Although a greater membership would be welcomed, our present difficulty is how to cover the deficit in the cost of production when the wealthy section of the Trade will not help, when wealthy members prefer to congratulate us on a preliminary work which urgently needs their liberal assistance before it can reach maturity, and when the Beekeepers' Associations in the Country, so far, have not shared in the burden of producing such a magazine for the benefit of beekeepers as a whole, and not for any business gain. Leading members of County Associations have done much for THE BEE WORLD. Officially, with one or two exceptions, no Association however has sent any donation to the Educational Fund of the magazine, so as to help in covering the deficit in the cost of production, nor has any society sent us anything like ten, twenty or thirty pounds or more as a collective annual membership fee in proportion to its members, even partly in return for copies of THE BEE WORLD. Unfortunately, with few exceptions, only the small holder has proved again to be the real co-operator.

Under the circumstances, it is obvious that if such a widely prevalent apathy will not help us to bring our experiment of an international and research bee magazine into full and quick fruition, the fault is not ours, when we are labouring so much gratuitously. If we had intended from the beginning to issue a bee magazine on business lines, this would not have been THE BEE WORLD. **Neverthe less, we have not issued this magazine except for making it a success.** Therefore, should our final offer not meet with an immediate response, the magazine has to be maintained as best as possible, and equally for **no** commercial gain,—which is a **permanent** policy for it—but we cannot ignore then that once the paper is self-supporting, it has to refund to those who have been guaranteeing its existence, by covering the deficit in the cost of production after deducting all income, such loan; and furthermore, we shall be led to believe that it is a greater assistance in future to **avoid** inviting the co-operation of those who can afford only to be apathetic.

Some people imagine that a research and international bee magazine has merely to be a collection of press cuttings and translations. There is hardly any originality in this course, which can easily be tackled by any linguistic beekeeper. Critical comparison of methods and original observations, in addition to contributions from capable correspondents abroad and at home are far more helpful. It all depends on the power of the dollar, which, so far, belongs to the American Bee Press and not to ours.

If the much recent correspondence on this question which has reached us does indicate that the notes given in the September number have created an unexpected interest in learning more about the rate of our progress, we trust these additional remarks will suffice, at least, for the present.

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Our Book Shelf.

SOME MINUTE ANIMAL PARASITES.[†]

By H. B. FANTHAM, D.Sc. Lond., F.Z.S., etc., and
ANNIE PORTER, D.Sc. Lond., F.L.S.

It is not an easy task to write "in a semi popular yet scientific vein" a work dealing with protozoology "with the idea of being of service to many different classes of readers" and with the hope that the book "may be the means of interesting the science student and general reader alike in the very great economic importance of these unseen foes in the animal world, and lead to a more detailed acquaintance with them in the future." Yet there is no doubt that the authors of this excellent manual have fully achieved their object.

Drs. Fantham and Porter will be remembered by our readers as the original researchers on **Nosema Apis** in this Country and as members of the 1911-1913 Government Research Committee on the Isle of Wight Bee Disease, whose reports (‡) are still of authoritative importance, and are only modified in parts by the recent elaborate researches of Dr. White, who has come to the conclusion, even under comparatively "non-dysenteric conditions," that **Nosema Disease does exist** and may be responsible for a high mortality among adult bees.

The chapter on Microsporidiosis is typical of the originality of the authors of this book, and will greatly interest the beekeeper, although it is concluded by the following remarks, amongst others, which will no doubt appeal to the student of tropical medicine: "Experiments made by us in England have shown that **Nosema Apis** can kill blowflies, house flies, sheep-keds, and certain butterflies and moths. But whether the wholesale sowing of Nosema would be advisable is very problematic, and in England it certainly would not benefit the citizen who uses honey for food, and keeps bees for profit. Whether it could kill tsetse flies and be used successfully in tropical Africa for this purpose, remains as yet untested, but is well worthy of trial."

Reviewing the work of Fantham and Porter, in the light of recent investigations, both in this Country and in America, one cannot help arriving at the following conclusions:

(1) That there is no doubt about the pathogenecity of **Nosema Apis** to the Honey Bee.

(2) That **Nosema Disease** constitutes a conspicuous type of I.W.D.

(3) That the fact that **Nosema Disease** or an allied disorder may exist in a mild, though in a prevalent, form in Countries where special attention is given to selective breeding, or that it has abated in Countries where former epidemics occurred, does not exclude the possibility of future epidemics, just as much as present views regarding the abatement in virulence of the disease are no argument against its past virulence, nor against its association with this protozoon as recorded then by capable investigators.

(4) That given a sample of live bees for microscopical examination, together with an account of their source and condition, the examiner ought, at least in the majority of instances, to be able to say:

- (**a**) whether the bees are non-infected with **Nosema Apis** at the time of examination, and are apparently healthy;
- (**b**) whether they have been infected, but, presenting gross pathological lesions and symptoms of marked debility, they show an acute or a subacute case of the disease in which only young forms of **Nosema Apis** can be discovered, or only its pathological after-effects preceding a rapid death; this picture may also be occasionally met with in a chronic case of the disease, when favourable weather, facilitating cleansing flights, may help the infected, though somewhat resistant, bees to rid themselves of organisms and toxins alike;
- (**c**) whether they are healthy "carriers" which in themselves are resistant bees, but which, nevertheless, present movable breeding nurseries of a harmful organism.

(5) That the diagnosis of **Nosema Disease** depends as much on pathological signs as on finding the protozoon itself within the bee in an aggressive manner, and that the former point is not sufficiently appreciated by researchers and diagnosticians, the task of diagnosing bee diseases microscopically being most suited for the patient entomologist.

Many other interesting conclusions may be pointed out, but these may be profitably deferred till we dissect the subject of legislation in future numbers.

[†] Methuen & Co. Ltd.; 7s. 6d. net.

‡ Supplements Nos. 8 and 10 to **The Journal of the Board of Agriculture,** May 1912 and July 1913 respectively.

THE FUTURE OF THE METAL COMB.

Mr. S. C. Ratliff, of Los Angeles, California, U.S.A., informs us that "many of the big bee men in the United States have expressed the opinion that the aluminium comb will entirely supplant the wax foundation." Have we ever doubted this?

With the established success of both the metal comb and the metal foundation, there is hardly an excuse now for any modern beekeeper, great or small, for not adopting one or the other. If you think it will pay you to continue adopting the old method of wax foundation, your loss in labour, repeated renewal, and disappointment, will prove your big error. Calculate it for yourself. **Cheapness does not generally mean true economy; it often indicates a way to extravagance.** Types of improved metal combs are bound now to appear in every Country, and a substantially strong metal comb will soon become a reality. The metal foundation needs of course no improvement. It is already a success and a **durable** article. It can be produced in any reasonable thickness and will last almost indefinitely.

Conservative beekeepers who blame their bees (and never themselves) for the building of occasional brace combs or drone cells on worker wax foundation will, of course, attribute now such faults to the metal foundation should they ever be destined to employ the latter......And as for the metal comb, they will be very busy in discovering "faults," and yet missing all the time any real faults that it may possess.

So far as Great Britain is concerned, at least two business houses intend, during the coming season, to sell nuclei of bees established on combs built on metal foundation (British Standard size), and possibly nuclei established on metal combs as well. Bees have wintered well in the U.S.A. (both in the North and the South) on metal combs, and there was no reason why this should be doubted.

For the 1920 season, the Sunny South Apiaries of San Antonio, Texas, are preparing 3,000 aluminium brood combs for early spring orders. The following compositions are offered :—

	Specifications.	**Price** Dollars.
(1)	One-Frame Nucleus with Tested Queen	5.00
(2)	Two-Frame Nucleus with Tested Queen	7.50
(3)	Three-Frame Nucleus with Tested Queen ..	9.50
(4)	Ten-Frame Complete Colony with Tested Queen	18.50

It is stated that these prices are no higher than responsible dealers in America have been charging this year for the old style wax comb nuclei. Even in Great Britain, we know that as much as six guineas have been paid to a leading breeder for a three-wax comb nucleus.

Considering that the Langstroth frame is to a certain extent in use in Great Britain, and is becoming more popular, and in view of the greater safety of importing American queens on frames rather than in cages, British beekeepers who wish to test the MacDonald comb and equally wish to import a good Italian queen from America, may well be advised to write to the above-mentioned American breeders who have very high references. Their prices are quite reasonable, and the travelling box and freight charges for a single comb nucleus, which no doubt can be sent by parcel post, are not likely to be prohibitive.

THE HARVEST IN CO. CORK.

The "Bee Man" writes as follows to the **Beekeepers' Gazette** for August. He is evidently referring to a good district: "While visiting beekeepers in the Bandon district, Co. Cork, I came on some apiaries where stocks gave fine returns even for this year; one in particular, where the total return from six stocks was 42 crates: two gave 9 and 8 respectively, the fortunate beekeeper being Mr. Thos. Good, of Melleen, Bandon. A widow woman near the village of Ovens, 9 miles from the City of Cork, got a stock this summer, and on July 25th, I removed 6 crates, all completed, and frames too full of honey. The Cork Associations are at their wits ends, to get a market for all the honey coming in. One Association has sold 2,500 lbs. at 2s. 3d. and 2s., and the very packing may be said to be a local industry." Irish beekeepers who have any difficulty in disposing of their honey need only look to the other side of the Irish Sea.

K.B.K.A. ANNUAL CONFERENCE.

We learn from **Bee Craft** that amongst the subjects which will be thoroughly discussed at this Conference to be held at Maidstone on the 8th of next month, is the introduction of a new Standard Frame.

THE AMERICAN CROP.

Mr. M. G. Dadant, in the **Am. B.J.**, estimates that this year's crop in America is not much over 75 per cent. of what it was last season; and that most of the honey moving as yet (September) in the hands of dealers, is of last year's crop, which in many instances is being sold at a loss so as to clean up the old honey and get ready for the new crop coming in. Later reports may give a different picture.

INCOME TAX ON HONEY.

Mr. J. McClelland, of Shantalla, Galway, reports to the **B.K.G.** that he has been troubled by the Surveyor of Taxes in his district, who is good enough to ask a beekeeper, who has seriously suffered by the loss of half of his stocks through official delay in providing food for bees last year, to supply him with accounts of profits and expenses. Mr. McClelland remarks: "In my opinion one of the results of this officiousness will probably be that beekeepers in Ireland will be chary of supplying the usual statistics to the police as to the quantity of honey obtained, number of stocks that survived the winter, and number of swarms, etc. If I am asked for an account, I shall furnish a balance sheet which will show me entitled to a rebate, and apply for the form."

CARRYING QUEEN CELLS.

Mr. David Preston, of the **East of Scotland B.K.A.**, exhibited at the Summer Conference of the Association an artificially heated pocket case for carrying queen cells.

"HYBRIDS" V. ENGLISH BEES.

Writing to the **B.K.R.** Mr. W. Woodley, of Beedon, Newbury, asserts that "as regards honey production, the hybrids are not equal to his old English strain of 20 to 30 years ago, but are more prolific."

A MILLION POUNDS OF HONEY.

In a contribution to the current issue of the **Canadian Horticulturist and Beekeeper** on the development of the beekeeping industry in the province of Manitoba, Canada, Mr. H. W. Sanders, of Sturgeon Creek, says: "One million pounds of honey is the estimate of the Manitoba crop given out by the Department of Agriculture, which is a tolerable weight for an infant ten years old or thereabouts. Here in the West we are often accused most justly with inflating the real facts of development in order to boost our own locality; but when every exaggeration has been pared down to the bare truth, and every falsehood exploded, there still remains a great body of legitimate and accurate statements to bear witness to the wonderful story of the settlement of the Great West during the last ten years."

THE DEMAND FOR SMALL FARMS.

Mr. J. J. Kettle, F.R.H.S., of the "Violet Farm," Corfe Mullen, Dorset, makes the following observations in the **B.B.J.** for October 9th: So many are prospecting for small farms, it will send up the price. If some syndicate would buy some of the farms of over a thousand acres of the best land and divide it up, it would be a boon indeed. These large farms only reach by auction £12 or £14 per acre, where the small ones reach £70 per acre. Those of us who, like the Prime Minister, "want to see this Country a fit place for heroes to live in," must be getting a move on, or the men will be tired of waiting and will be off to another clime to live out the rest of their days. Writers of other lands show that, as beekeepers, there are great possibilities for them in lands of perpetual summer, like parts of Australia and New Zealand.

COLOUR PHOTOGRAPHY OF BEES.

Mr. Alec Steven, L.R.A.M. (Lond.) of 12, Regents Park Square, Glasgow, is experimenting with natural colour photography of bees. We wish him the success which his scientific labour and devotion merit.

THE BRITISH INDUSTRIES FAIR OF GLASGOW.

Several beekeepers are organising interesting beekeeping exhibitions for the purpose of boosting the Craft at the British Industries Fair to be held shortly in Glasgow.

THE CRYSTAL PALACE INTERNATIONAL EXHIBITION

A great deal of preparation, we understand, is already afoot for the 1920 international exhibition to be held at the Crystal Palace, commencing May 1st. The exhibition will last for five years.

We do not exaggerate if we assert that this gigantic exhibition which will considerably serve British Industry and will equally foster good international relations in the business world, presents the finest opportunity for the Bee Industry in the United Kingdom to popularise itself both at home and abroad. As now is the time to apply for stalls, leading business Houses and Associations should not allow this exceptional business chance to be missed. It equally merits the attention of beekeepers abroad who have or wish to have business relations with this Country.

DUTCH BEES CONDEMNED.

"My own experience with Dutch bees has been such that nothing, absolutely nothing, will induce me to harbour them again! Life becomes misery with a 3-frame nucleus swarming!"—G. M. G., Eastbourne.

EXPERIMENTAL WORK IN KENT.

Mr. G. Bryden, Hon. Sec. to the Rochester division of the **Kent Beekeepers' Association,** is interesting himself in the development of an experimental apiary of about twelve colonies for the benefit of the members of his division. His plan is that the owner of each colony should conduct some useful experimental work in his spare time at the Experimental Apiary, and should keep a record of his work for discussion at an open conference to be held at the end of each season, when a prize may be awarded to the best worker.

It is most gratifying to us to find British beekeepers finally appreciating that research work is not by any means confined to laboratory investigations, nor is it necessarily the educational function of the State alone.

Mr. Bryden is quite capable of stimulating experimental work in his district, since he himself is an experimental worker and an expert apiarist. He is discussing his experience of "Indoor Wintering of Nuclei" at the **B.B.K.A.** Conversazione to be held on the 23rd of this month as announced in our last issue, and we hope to examine his experimental work in our next number. He claims the original invention of the wasp trap which has been introduced to beekeepers by Mr. Taylor.

COLOURED ILLUSTRATIONS OF BEE STRAINS.

"I note you have received enquiries for coloured illustrations of different strains of bees. I have a booklet sent to me by Dr. Bainbridge Fletcher issued by the **Agricultural Research Institute of Pusa** on 'Beekeeping in India' by C. C. Ghosh, under the direction of Dr. Bainbridge Fletcher, in which there is an excellent colour plate of queen, worker and drone of the Italian race, also Apis Indica, Apis Florea, and worker only of Apis Dorsata, the latter being a giant indeed; figures are about 2½ times enlarged."— F. M. C., Copford.

APPRECIATING THE METAL FOUNDATION.

A good deal of interest in the metal foundation is being exhibited by apiarists who have had an opportunity of inspecting it side by side with the MacDonald Metal Comb. Our opinion is in favour of the latter since it presents a ready comb, but strange to say, a complete metal comb is still being considered with apprehension, for the wintering of bees, by some good beekeepers such as Mr Bryden and others. Mr. Bryden remarks: "I was delighted with your interesting display of the aluminium comb and the metal foundation. Of the two, I favour the foundation." Mr. Whyte also has no hesitation in saying: "I think your foundation is better, all things considered, than the comb." Many communications from experienced beekeepers bear the same note and several applications have been received for specimens for exhibition. Our spare specimens have been lent to interested members of the Club and seem to be touring all over the Country. We do not know in what condition they will come back, but we hope, by that time, the metal foundation may be available in quantity. We trust, however, that the metal comb will in time replace the metal foundation, just as the latter may replace the wax foundation. A specimen of the former has been requested for the coming Key Industries Exhibition of Glasgow.

The appreciation of the metal foundation seems to rest on two things: (1) the corerctness of the observations and the success of the experiments which led to its creation, and thus brought to the apiary a useful and economical article of indefinite durability; (2) the fact that the metal foundation has solved the question of a foundation support, just as much as it has proved the fallacy of the "wax bait" theory and the erroneous teaching that sharp ridges for the bases of the cells are essential for the guidance of the bees in regular cell building.

Many experiments have been conducted by various apiarists at different times for solving the question of an effective **support** for wax foundation, whether as sheet or as a spread layer, but unfortunately without success, for reasons already discussed. The wax **foundation** itself, on the other hand, has never been discarded since its introduction in 1857.

Mr. Richard Whyte, for instance, tells us that "many years ago he experimented with wood plates dipped in wax, also with stout glazed paper. The paper the following season got holed, and the wood was not quite satisfactory. Plain metal sheets dipped in wax were better, but of course, all these did not control drone cells. He tried the coating of metal plates with wax and ran them through his foundation mill, but he found that it took wax of a **thickness** of ordinary foundation on **each side** of the metal plate before he could get an impression of the cells of sufficient boldness to answer the purpose." The labour involved in all this, and the cost of a solid support (which, for industrial reasons, has to be thin, and is therefore liable to buckle in the case of metal, and to swell and split in the case of wood), in addition to the cost of the foundation itself, discouraged all hope in improving on the ingenious wiring method of support, despite its nuisance and faults. It is not short of a great boon to the industry to be at last presented with a foundation and a support combined, which is based on new conceptions, of the correctness of which the bees themselves have supplied a convincing proof.

As recently as May 1917 we understand from Mr. Claridge, that he tested a waxed plain metal sheet and on this the bees built comb as may be expected.

We appreciate the generous tribute paid to the evolution of the metal foundation, but we trust we may not be misunderstood if we decline to consider it superior to the metal comb, otherwise we would not have troubled, from a scientific point of view, and despite our interest in the development of an improved metal comb, to popularise the MacDonald pattern, and to suggest to its inventor to produce it in British standard as well as in 16″ × 10″ and 14″ × 12″ sizes for the coming season, if possible. We have also done our best in persuading wealthy business houses to develop other types of artificial combs, since we firmly believe that the rapid development of the artificial comb, of whatever good pattern, will materially help in the progressive and profitable development of scientific bee culture.

THE DOUBLE TOP BAR FRAME.

Perusal of American literature of many years ago shows that the double top bar frame was tested satisfactorily, but was not popularised, apparently for the sake of cheapness in production— a wrong principle which always handicaps progress—although the excuse that it is not fool-proof is advanced. As a matter of fact, one of its advantages is that it **is** fool-proof. The **deep** frame, on the other hand, has not been tested in America, presumably because it does not suit the convenience of manufacturers to produce it. What we are concerned with, however, is the convenience of our bees and their winter safety at any reasonable price.

THE SUPPLY OF CANDY.

We hope to give some notes on the **tricks of candy feeding** in our next issue, based not on quotations but on observations with over hundred colonies, seeing that our original views on the subject as expressed in the **B.B.J.** months ago, and lately in the **B.W.**, are being echoed and discussed in other contemporaries. Our suggestion of **fat candy** is also being received with favour in America.

The object of this note is to draw attention to the fact that beekeepers who find now that they are absolutely **forced** to adopt the objectionable practice of candy feeding in winter, have no alternative but to suffer losses, as they confess their failure to make **good** candy for their bees, and text book formulæ cannot be depended upon in the guaranteed production of candy, which will **maintain** desirable qualities. Experience and suitable machinery are important factors. Unfortunately official red tape has given one firm alone—and they have no interest whatever in beekeeping— the monopoly of candy production. We have examined the cost of production only to find that at the price at which it is sold, a profitable undertaking indeed is given to that firm, who are nevertheless permitted to place the production of bee candy in a secondary position to the manufacture of their more profitable confectionery. We do not blame them. We can only blame a democratic Government for such a reactionery policy which is leading to the injury of beekeeping interests, and thus neutralising to some extent the impetus which the Government is giving to the successful development of the industry. It is a real mystery and a perfect blunder that beekeepers have to be prevented by officialdom from giving their sugar rations to the Bee Trade for transformation into good candy. It seems that the "Liberty War" has finally ended by robbing the British beekeeper of much of his liberty. It is the duty of the British Bee Press, however, to fight for its redemption.

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The Arena: Letters to The Editor.

Criticism is a disinterested endeavour to learn and propagate the best that is known and thought in the world.—Matthew Arnold.

THE PURITY OF THE ITALIAN BEE.

To the Editor of The Bee World.

DEAR SIR,—I see you have noticed my article in the January number of "**L'Apicoltore.**" Perhaps you have noticed also Mr. Piana's article in its September number. I have recently spoken with Mr. Piana. Note, our intent has been to caution Italian beekeepers against the danger of importing more black bees. Most happily, to this day, the black bees we mentioned in our articles were imported only into the northern provinces of Italy, on the borders of Switzerland and Austria, before the European war.

Here in the centre of Italy we have never seen any black bees, and also the great majority of the provinces of North Italy are quite free from that evil.

I should be glad if you would give this information to the readers of your fine and worthy bee magazine.

Yours faithfully,
E. PENNA.

Bologna,
Italy.

[Signor Penna, amongst many leading international apiarists, has most kindly favoured us before with liberal messages of encouragement, which, following our practice, we have gratefully reserved for ourselves. We are obliged on this occasion, however, to give full publicity to the above communication, for the simple reason that we have been privately and indirectly accused—to our great surprise— by a noted Italian breeder, of condemning the Italian bee, and of damaging the interests of Italian apiarists. This is apparently because, whilst fully acknowledging the merits of Italian bees, we have never shut our eyes to the virtues of other strains, nor have we forgotten the demerits which every strain is not exempt from. Furthermore, we have apparently committed a crime by drawing attention to the important factors of **breeding and management.** Everyone knows the multiple virtues of Italians. Few indeed realise that, by special management, you can turn your Dutch bees into good foragers instead of professional swarmers. It is surely of practical and literary importance to discuss such questions. That Dutch bees, independent of the nature of their production, whether selective or otherwise, are truly immune to I W D is a claim which can be easily dismissed. That Italian bees have proved in many instances to be resistant to this infection no one can deny, but the previous remark is also applicable to them. Similarly in regard to foul brood, it is absurd to advance that the Italian bee, as such, is immune to its forms. We need only consider the extent of these diseases in America, despite legislation. Yet we do not suggest that the Italian bee is specially susceptible to these diseases. We only attach great importance to **selective breeding,** a practice which we have no doubt is adopted in various forms by noted Italian apiarists.

So long as the honey producer fails to thoroughly understand the habits of a certain strain which he employs, securing a honey harvest will be no more than a matter of chance. Where interest in study is lacking, adhering to just one strain of bees, which has proved satisfactorily workable in the hands of the contented beekeeper, is decidedly the wisest plan.

The pages of THE BEE WORLD will show, on careful perusal, how much have we defended the interests of respectable breeders **everywhere.** Our literary columns are open for discussions by men of experience and knowledge and irrespective of school, profession or nationality, just as much as our publicity columns are open to all respectable traders. And if we are only favoured with such a complaint as the foregoing instead of real co-operation, we think it is tolerably fair to say that we are hardly to blame.—Ed., B.W.]

EGYPTIAN-ITALIAN BEES.

To the Editor of The Bee World.

DEAR SIR,—It will no doubt interest you to learn that I now find one colony of my Egyptian-Italian bees possessing quite a good lot of stores, contrary to what I expected. **The hive is full of bees, which are clustering in a good compact mass.** As late as the middle of October, both lots had plenty of brood. They have used considerable amounts of propolis in fastening down quilts, etc. They still fly and **carry pollen** on warm mornings.

Yours faithfully,
F. M. CLARIDGE.

"Braemar,"
London Road,
Copford, Near Colchester.

[As we have so far noticed that pure Egyptians are not fond of **propolising,** and in fact avoid it, we conclude that the "fault" of excessive propolising by Egyptian-Italian bees is not to be attributed to the introduction of Egyptian blood. However, this is not a "fault" so far as wintering preparation is concerned, nor is it a "gain" except for bees wintering in a skep or the like. In a modern hive, and in the hands of a modern apiarist, it would be a great pity if the latter thought that there is any gain or loss in encouraging or discouraging this habit prior to wintering. A good winter board and adequate quilts present a better alternative. Propolis is truly a practical nuisance when it finds a free way to a section crate, but it is doubtful that the Egyptian-Italian bee will ever reach the standard of the predominant British bee or the Carniolan bee in the production of section honey, although no doubt she is quite suitable for extracted honey, and is an active forager.

Mr. Claridge's testimony to the wonderful **prolificness** of the Egyptian bee, whether pure or "hybrid," is endorsed by our own experience.

When a cluster is forced to move upwards (avoiding the current of cold air from the entrance) some brood may become exposed and chilled, but this does not in any way affect our judgment regarding the great benefit of encouraging **autumn breeding.** We are wintering our pure Egyptians under comparatively unfavourable conditions, including the absence of a protective porch. To our great surprise, these bees did not hesitate to remove from the hive at a temperature of 40° F. the small proportion of dead brood present, after which they remained quiet and normal. Such a comparatively insignificant loss did not alter the fact that, through stimulative autumn breeding, theso bees are now densely covering eleven combs, and thus assure one's mind regarding their safety, so far as a powerful colony are able to protect themselves against inclement weather. The extra food which they may require will not be a loss but an investment.

We have not yet heard from any beekeeper wintering "hybrid" Egyptians in this Country, nor have we noticed even pure Egyptians **clustering** in other than a **compact mass,** and it is possible that the fable of "separate clustering" started with some unfortunate beekeeper, and was transmitted in the usual fashion. We need hardly add that cases of "separate clustering," principally through faulty methods of wintering, occur as an exception with all strains of bees, and the conscientious apiarist will generally find himself to blame.—Ed., B.W.]

FUNGUS DISEASE.

To the Editor of The Bee World.

DEAR SIR,—In your September Editorial, I notice you state that there is no convincing scientific literature behind the "so-called Fungus Disease" of bees.

Surely you have overlooked Massen's work ? (**Ber. üb. d. Tät. d. Kais. Biol. Anst. f-Land-u. Forstwirtschaft, Berlin, 1913 and 1914**). I can also add my own testimony, as I received samples of the causal fungus of "**Kalkbrut**" (the less common of the fungus diseases) from Germany early in 1914, and I am quite satisfied, from its behaviour in pure culture on bee brood and other media, that it is pathogenic to the bee.

I am still working on this fungus, (which German authorities mistakenly identified with **Pericystis alvei**; the latter is quite distinct and is non-pathogenic), and on some other bee hive fungi, and hope soon to be able to publish my results

Yours faithfully,
ANNIE D. BETTS, B. Sc.

Hill House,
Camberley, Surrey.

[Something more than laboratory tests is needed before a definite opinion can be given. Controlled inoculation tests, both under favourable and unfavourable conditions, chiefly provide the material for considered judgment. We do not see that we already possess a sufficiency of this. A hive fungus is not necessary a pathogenic hive fungus, and even if so, it does not necessarily follow that it is primarily causative of disease. Miss Betts, who will kindly contribute to our new section, **The Bee Laboratory,** commencing the November issue, is capable enough of shedding new light on the question of the Bee Hive Fungi, and we look forward with interest to the results of her devoted labour.

Probably the latest research work on fungus disease which is commanding much attention at present is that of Turesson, the Swedish scientist, which is reviewed by Dr. Morgenthaler of the Bacteriological Institute of Liebefeld, near Berne †. The work which suggests that the fungi of mould are productive of a chemical poison allied to phenic acid, which is considered finally causative of the symptoms of May Disease, Paralysis, and the like, does not exclude the effects of **metabolic poisoning** from prolonged confinement, as we originally suggested two or three years ago, nor does it take into consideration the harmful effect of deteriorating food left in external combs which may ferment under unfavourable conditions, instead of becoming additionally ripened Furthermore, early in the spring, bees increase their food ration, and when coincidentally damp unfavourable weather prevails, the harmful accumulative results of confinement are bound to become intensified.

More exhaustive research is needed for determining the exact rôle which hive fungi play, if they do at all, whether primarily or otherwise, in the causation of bee diseases. Ed., B.W.]

THE STANDARD FRAME.

To the Editor of The Bee World.

DEAR SIR,—With regard to Mr. J. Herrod-Hempsall's article in your September issue, I must say I think the view expressed is a most extraordinary one. It is only a short time since that, as editor of the **B.B.J.**, either he or his brother, acknowledged that he had never used the large frame, and what slight experience he had had of it, was gained in his travels about the country. Now so far, I have found that without exception all those who have spoken or written against the large frame have been men who have had no experience of it whatever and it is quite obvious that even one who is in the position of Mr Herrod-Hempsall, cannot give an opinion having any weight on a subject of which he has not had any experience.

I do not wish to persuade anyone who is at present satisfied, to change, neither do I wish or expect the B.B.K.A., or in other words, the Secretary of that body, to change the standard, but I do say that it is the obvious duty of the B.B.K.A. to institute fair trials of frame sizes for a year or two at any rate.

The 16″ × 10″ frame has been advocated by me for many reasons (one of the most weighty being that you can make a square hive with it), and because it is in use already and is not too deep for 11″ timber. I have had much success with it, and would not go back to the standard on any consideration.

The list of frames given by Mr. Herrod is rather misleading, unless he means by "general use" use by a very small minority.

I should say those in really general use are:—

The Langstroth	17⅝ ×	9⅛	inches
The Dadant-Quinby	18½ ×	11¼	,,
The British Standard	14 ×	8½	,,

The rest are very much in the minority. For many reasons the 16″ × 10″ frame is far better than any of them. The Langstroth is too shallow, the Quinby too large, and the Standard is far too small. In America, they are beginning to wish they had a shorter, deeper frame, as I understand.

As Mr Herrod says, there is "no legal obligation to use the standard frame" (neither is there any obligation to do so at all! I am devoutly thankful to say), many of us intend to discard this frame entirely as being quite unfitted for use with good strains of bees.

Its long lugs would at once put it out of count for commercial honey production, as, though quite useless, they cause this frame to require as much timber to be used in constructing hives for them as is the case with larger and more sensible sized frames.

So far, I have been able to come across no one who, once having used large frames, would go back to the Standard, and I know several men who run apiaries for both honey and bees for sale, who very greatly regret that they are obliged to keep the small frame in their apiaries, simply because it is the Standard, and as yet, there is no large demand for bees on any other size, while they get much more honey from their large hives.

I have no doubt at all that, when the B.B.K.A. fixed upon this little frame, they (no doubt unintentionally) gave British Beekeeping a blow that has served to keep us back, so that we are at present, in a state which compares very unfavourably with that of most other Countries

Yours faithfully,
R. B. MANLEY.

Brightwell,
Wallingford.

[The argument which Mr. Manley advances in favour of a large deep frame is indisputable. Neither Mr. J. Herrod-Hempsall nor the secreatry of the B.B.K.A. have denied the merits of a large deep frame, especially when more prolific strains are being now patronised in this Country. The question is not one of adopting a certain frame, but of applying the principle of a large deep one to the predominant hives in the United Kingdom, which, so far, take nothing but the British Standard frame. Of course, new hives can be made to take any frame desired, and Mr. Manley favours the 16″ × 10″, the good points of which, as we have already remarked, cannot be ignored. On the other hand, he has not solved the question of serving the interests of those who have a good number of hives adapted to the Standard. These beekeepers form a **majority** in this Country, and their position must be placed in the foreground. For their interests, Mr. J. Herrod-Hempsall has advocated increasing the standard frame in **depth,** without altering its other dimensions. Such a large deep frame which may be made more or less equivalent in total area to the 16″ × 10″ and would have in addition two main advantages: (1) its adaptability to the predominant hives (and not only to W.B.C. ones) by the addition of a suitable eke or lift; and (2) its greater depth, which is decidedly more in conformity with the principles of scientific beekeeping, based on studying the natural habits of bees and on developing beekeeping accordingly to the advantage of both apiarist and bees. It is a matter of surprise to us that those who have no hesitation in "skyscraping" their hives object to providing their brood chamber with an eke or a super of a few inches depth.

We have discussed the question of a Standard deep frame of a total large area with J.H.H. nearly a year ago, and his opinion then was the same as that expressed in the **B.B.J.** recently and we believe for the first time in print. From many points of view his frame is decidedly **superior** to the 16″ × 10″.

Although the large frame is bound to come into prominence in the course of time, it is regrettable that there are many people who will avoid it for a long time, and be merely influenced by custom. We trust therefore that the **B.B.K.A.** will not hesitate to popularise it at the risk of being accused of an adventurous policy by the conservatives.

Mr. Manley has the moral courage to express his opinion in a straightforward manner. He refers to the "**B.B.K.A.** or in other words the secretary of that body," by which he presumably means that the Secretary of the Association has an influential personality; and he talks about the "blow" which the **B.B.K.A.** gave British beekeeping when they fixed the Standard many years ago. Although the position of British beekeeping still needs a good deal of elevation, it is fortunately above that of many other Countries. Furthermore, the **B.B.K.A.** is a democratic institution, and, with its affiliated societies, forms a most powerful body of organised beekeepers. The Council of the Association are merely servants and not masters of the members. And if the latter fail to enforce their views and to exercise their voting power properly, they are alone to blame for their indifference. The Council of the Association has never been urged before to popularise a different Standard frame, until the wholesale importation of prolific strains of bees is making this now more or less imperative. And it is for the members of the Association and its affiliated societies to urge this on the Council. Should the Council then prove to be apathetic and bureaucratic, its members will deserve to be sacked. We examine the list of membership of the Association and its affiliated societies only to find names of highly educated people as well as the humblest cottagers, and collectively a respectable and influential organisation. Now, if such a body will fail to appreciate the needs of British beekeeping, it is a pitiful state of affairs. And if they do, and yet fail to urge their views on the Council, and fail also to exercise their voting power, it is equally a sad state, for which the British bee community as a whole deserves to be censored.

There is one point in Mr. Manley's letter which we can hardly understand. We mean his reference to the unsuitability of the Associate Editor of the **British Bee Journal** to act as judge in regard to the question of the revision of the standard frame! Needless to say, dozens of literary letters pass daily through the hands of J.H.H. bearing on this question and others. He has also acted for a long time as touring expert and judge, who has had exceptional opportunities of handling bees kept under different conditions. He can hardly give therefore a biassed opinion. But even were he to say that he cannot give any opinion regarding the 16″ × 10″ frame, simply because he has not used it himself, we would not have felt less surprised. Certainly we would not have hesitated then to remind J.H.H. that he has lost his adaptability to apply the fundamental principles of beekeeping in a logical manner. But obviously he has not. Research work has certain qualifications, not amongst which however is testing the obvious, except as a leisure task and for statistical information. Confirming or repudiating the doubtful is the function of useful research. And unless we have to ignore all practical beekeeping lessons and what is confirmed of the habits of the Honey Bee, we can hardly be logical in denying the merits of a large deep frame simply because we have not tried it. This would be almost equivalent to an admission of ignorance of elementary beekeeping principles.

We would be pleased to know Mr. Herrod's further observations on this subject. —Ed. B.W.]

YOUNG QUEENS AND SWARMING.

To the Editor of The Bee World.

DEAR SIR,—Have any experiments been carried out with a view to determining whether stocks headed by yearling queens are less liable to swarm than those headed by older queens? The textbooks lay it down as an axiom; but what I want is an authoritative report of careful observations on the subject, giving, if possible, the ratio of swarming that was found to subsist between queens of different ages. Perhaps some American beekeeper can oblige.

Yours faithfully,
H. CAMPBELL

Brewoods Close
Cookham Dean, Berks.

[We believe various experiments bearing on this point have been conducted abroad, as also on the dates of the emergence of brood, on the response to wax foundation, etc. Nevertheless additional experiments as suggested would be welcome. The accumulative experience of beekeepers everywhere is the axiom to which our correspondent refers, although it needs, however, the qualification that the non-swarming youth of a queen is variable with various strains, as much as it depends on her age and the economy of the hive.—Ed., B.W.]

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† **L'Apicoltore Moderno,** May, 1919 and **The American Bee Journal,** September, 1919.

Autumn Leaves from bygone seasons

COLD AS A BEE ENEMY AND FRIEND.†

Cold, generally speaking, is prejudicial to bees. When tempted by a bright sun after a fall of snow, a few have left their comfortable dwelling they are quickly chilled, and in a very short period are past recovery. But with ordinary precautions, in stopping crevices, and providing a sufficient external covering, a well-peopled and well-provided hive runs no hazard from even the severest winter. Consistently with that wisdom that shines forth in every part of the creation, insects that feed upon leaves, flowers, and green succulent plants are generally in a torpid state during the winter, when they cannot procure for themselves subsistence abroad. Bees are in this state, and eat little, while cold weather lasts; but they are by no means in so complete a state of torpidity as to eat none at all. On a mild day in winter, when the sun shines and the wind is low, we often observe them eagerly taking advantage of this favourable temperature, and coming abroad in hundreds to enjoy themselves in the open air. If we open a leaf-hive in the very depth of the cold season, we shall find them closely clustered together, but in near contact with the provision cells; and the whole mass moving without separating, and by this means doubtless contributing to preserve the general warmth.

It has been made a question among Bee writers, whether a mild or a severe winter be most favourable to the health and well-being of these insects? Bonner and others are advocates for mild winters; while White, Bevan, &c., maintain that severe winters are most salutary. We are of opinion that the question admits not of a **general** determination, but that **special** regard must be had to the state of the hives—a circumstance which has been too little taken into account in the discussion. In a well-found hive, it is of very little importance to the inhabitants of what nature the winter may be. If it is severe, they have enough of internal heat to preserve them from the severity of the external atmosphere. Huber found that when the thermometer in the open air stood several degrees below the freezing point, it rose, when plunged into a populous hive, to 86 and 88 degrees. Summerdawn observes that the heat of the hive is such, even in the middle of winter, that the honey never crystallises, unless the hive be very weakly peopled. Reaumur found brood of all ages in the month of January; and the same thing was experienced by Huber, when the thermometer within the hive stood at 93°. If, on the other hand, the winter be mild, the bees consume food partially, and frequently go abroad into the open air; and by thus voiding their excrement, preserve themselves in health. But the case is far otherwise with a hive thin in population, and scantily provisioned. In severe weather, their members are too few to keep up the vital warmth, and they are in imminent danger of perishing, should the cold continue for a lengthened period. Should the winter be mild, they consume their stores; and on the arrival of spring, if they still survive, they run the hazard of perishing of hunger. We are decidedly of opinion, therefore, that the temperature has much less influence on the prosperity of the apiary, than is generally imagined; and that the bees coming safely through that inclement season, depends in almost every case on the abundance of population and of food. There may be one exception to these general remarks:—In a mild winter, a hive which is thinly peopled but well-stored with food, has a chance of escaping. But even in this case we cannot always count on its well-doing, though its failure may arise from a different cause. Want of numbers is injurious, not only because it is accompanied with the want of the requisite warmth, but also because it seems greatly to dispirit the bees and we have seen many instances of hives deserted in spring while sufficiently provided with honey, but disheartened by paucity of numbers. Nevertheless, **famine** is one of the worst enemies they have to encounter; and many hives that are supposed to die of cold, do in fact die of hunger.

(†) **The Natural History of Bees** (Vol. VI., The Naturalist's Library; Published by W. H. Lizars, London, 1840), p. 153.

Modern Inventions.

The Metal Foundation.

Sixty-two years ago, Mehring introduced the **wax foundation.** His invention coupled with the **moveable frame** introduced by Langstroth opened the first revolutionary period of modern beekeeping.

Many valuable inventions, great and small, have since then made their appearance; and we are now witnessing the second revolutionary era created by the introduction of the metal comb and the metal foundation.

Unfortunately, certain old superstitions have not died with the advance in knowledge. So far as the development of artificial foundation is concerned, we are interested mainly in two fallacious theories: (1) the "wax-bait" theory, which constitutes a sacred belief that is most difficult to dislodge, and (2) the suggestion that bees reject adulterated wax, even when it does not possess an objectionable odour.

Both views have been principally due to those interested in the development of the wax foundation industry. Their repudiation is quite a simple task. Every independent and observant apiarist, who gains his knowledge from the hive more than the text book, knows how truthful it is that even if a hive is "washed with honey and water" it will not entice a swarm to accept it if they are determined to desert it. As an exception, even brood will be forsaken; although, as a rule, it appears to be the **only** effective bait for safeguarding against decamping. Bees may limit their wax building activities to a section of the foundation (in the case of a small cast, for instance); they may entirely ignore the sharply embossed bases of worker cells (despite the absence of sagging of the wax sheet) and build uniform drone cells; they may even look upon the frames fitted with wax foundation as equivalent to division boards, and attach brace combs to them; and they may do many other blunders; but these facts are generally forgotten when a new invention in the shape of the bare **metal foundation** is under examination. Further, we need hardly remind every practical beekeeper that bees have again and again accepted adulterated wax foundation and built their combs on it with disastrous results in hot weather. In fact, their **indiscrimination,** and not their selection, has justified the warning given in all text books against the use of adulterated wax. Such warning is usually enforced by impressive illustrations. These would be entirely superfluous, were our bees so capable of rejecting adulterated wax, as would give us an infalliable test.

It is opportune also to deal with an intelligent theory offered by way of consolation to the beekeeper who finds that half of his foundation sheet disappears. It is generally explained that the bees utilise the wax to help in building their comb. We cannot say that bees disrespect wax foundation, but our close observations of the habits of the Honey Bee do not lead us to the general belief that she is economical in wax building. We have repeatedly left on the floor boards of hives, old pieces of wax (e.g., after destroying queen cells, etc.) only to find as a rule, that these are gnawed by the bees and thrown out of the hive in the same way as dry granulated sugar is treated, instead of being habitually dissolved and stored. It is interesting in confirmation of this to observe that no popularity has ever been the fate of the suggestion that bees should be supplied with powdered wax in the same way as they are supplied with artificial pollen.

Were bees to "scrape" the foundation, and to use the scrapings for "prolonging" its ridges as it is generally asserted, no one could possibly dispute the evidence. Utilising dark or coloured foundation, one would expect to see the new wax built on it to be at least mottled, or bearing its colour to begin with; whereas this as a rule has never been witnessed. Again, in cold weather, when wax is brittle, it is often possible to dislodge the wax comb from the artificial foundation and to recover the ridges of the latter with the only modification of being thinned, which appears to be due to two causes: (a) side "scraping" in the same manner as the bases of the cells are "scraped" by the bees; (b) side pressure due to the ridges being **embraced and super-imposed** by the newly built wax. For the latter reason, it is fallacious to depend on the evidence of a cut section from a comb, since the ridges will be covered by the new wax which starts at the **bases** of the ridges on either side. It is more instructive to attempt, on a cold day, to dislodge the natural wax from the artificial foundation. Choose a new one on which you can **trace the stages of wax building.** This will be easily appreciated when the comb and the foundation are of different colours, as it is generally the case with new comb. We have demonstrated these facts on several occasions to interested beekeepers.

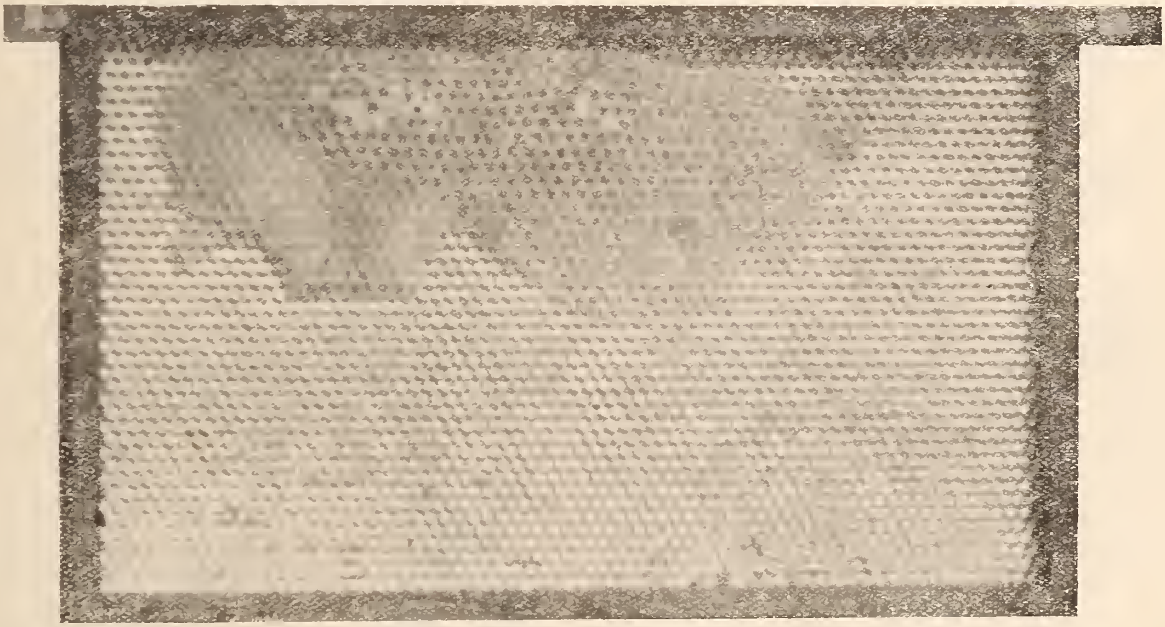


Fig. 27.—**THE METAL FOUNDATION.**

A British Standard frame fully fitted with a sheet of "round-ridged" metal foundation of the worker type, acting both as a true comb "foundation" as well as a self "support," thus serving a double purpose. The worker cells shown were built and partly stored with syrup four days after its insertion in a hive containing another frame which was receiving greater attention (apparently because it was nearer to the dummy feeder employed). Original combs of the hives were previously removed. Consider the extent of wax building within this time, at a temperature which has rarely exceeded a maximum of 40° F. and which has often been below even 32° F.

The frame was photographed at night (in artificial light) following a demonstration, and is partly out of focus. Bees fully established on a comb built on metal foundation were also exhibited in an observatory hive.

The side pressure on the ridges may, in exceptional cases, result in their prolongation to an insignificant degree, but this hardly merits lengthy arguments on the "boon" of wax foundation. As to what is the ultimate fate of the "thinnings" removed from the wax sheet, we have no doubt that it is on the floor board of the hive, and finally where the scavenger bees choose to deposit the hive "débris." The process is apparently wasteful, but it must serve some purpose. So far as the thinning of the wax foundation is concerned, is it possible that its aim is to secure uniform thin walls for the cells (bases and sides alike), so as to allow for the subsequent shedding of the cocoon by the brood, and thus prolong the utility of the cells? It is extravagance in a sense. It is true economy in another. The moral is obvious. Wax foundation manufacturers would serve the pockets of their customers and probably their own pockets, apart from saving the bees from performing such labour, by supplying **thin** sheets of foundation from the beginning, and relying on good wiring as the best available means of support. We can advance more and more practical arguments against the presumption that the bees utilise, as a rule, the foundation wax for comb building, but our space forbids, and we consider that we have said enough on the subject. Although an additional proof of the lack of economy (as understood by the beekeeper) in wax building, we may mention the case of wax building by Egyptian bees just as a matter of general interest. These bees, instead of pulling down the ridges of the wax foundation (made to suit the requirements of European bees) and erecting a greater number of cells of smaller size to suit their own requirement, are satisfied with following the foundation prints. On the face of it, there is again a case of gross extravagance, but in reality it is the opposite, since it produces a more serviceable comb fit for the rearing of more generations of bees, than a small-celled one.

So much for a review of the theories associated with the hypothetical merits of wax foundation. Its demerits strongly present themselves when the advantages of the metal foundation are observed.

The greatest demerit of the wax foundation is its destructability. The corrugated metal core introduced by Jung and Cämmer, has not improved this. Such thin metal as they advocated, possessing nearly the gage of the coil of a stapling machine, was bound to buckle and to end in the separation of the comb from the solid **core** with disastrous results. It meant an unnecessary expense and a disappointment. The ingenious **wiring** process introduced by Vandervort, has proved a little better, although few would deny that it is a big nuisance. Finally, Dr. Miller's **splints** method made its appearance. It prevented the sagging of the foundation, but it did not succeed in securing the comb to the frame so as to be a real safeguard against wholesale breakage when bees are travelling in hot weather. Therefore, so far, wax foundation and the methods of its attachment and support, whether in use at present or formerly introduced and discarded, have not helped us in any way to insure the safety of bees when travelling, nor has it given us a guarantee of compelling the bees to adhere to the building of worker cells. The commercial apiarist has still to rely on old wax combs (where metal combs are not avaliable) for the sale of his bees, and often to the disgust of the non-appreciative novice.

The origin of metal foundation lies in our close observation of the habits of bees, and of our appreciation of their acute sense of touch, apart from our endeavour to evolve a practical compromise between the metal comb and the wax comb (as built on wax foundation).

We have known bees to build wax on paper, instead of gnawing it (and of this there is a specimen in the museum of the Apis Club) and on glass, let alone good worker cells on wood. Is it conceivable that they would ignore embossed metal foundation? But there the question of a "wax-bait" cannot be ignored. It has been handed down from one generation to the other, and is still chaining us. Yet we do not know of the existence of such a bait in a new skep which may be accepted by a swarm, and we have known its existence in an old one in which a swarm would not stay. Reviewing these matters again and again did not lead us except to the advisability of experimenting with naked metal foundation for the purpose of securing regular worker cells, and overcoming all the disadvantages of wax foundation, whilst retaining any advantages which the wax comb may possess.

When time permitted of conducting such an experiment, the season was at a close, the railway strike was threatening, and it was practically impossible to secure embossed metal foundation, since its production with a mill of soft metal meant nothing short of the destruction of the latter. It was finally due to the loyal co-operation and enthusiasm of Mr. Robert Lee, that the first experimental models were produced at such a sacrifice.

Testing was conducted in the light of a control experiment with wax foundation. Altogether, the bees from five colonies were employed. Candy entirely failed to induce the bees to build wax at the prevalent temperature which was often below 40°—32 F. The bees merely clustered on the frames and around the candy. It was not until syrup feeding, a few days later, was started, that they began comb building and at a good rate, but not until the original combs in the hives were removed. Approximately the rate of wax building on both experimental model and control was the same, so far as may be judged by the total surface area of the combs produced. No drone cells were built on the wax foundation. An area of about one square inch of drone cells was built on the metal foundation, but when this was removed it was not repeated. As best as possible, the strength of the bees in both hives was equalised, the bees were hived through the entrance by shaking the combs with the adhering bees on an extension hive platform. The mortality through this practice and through the repeated opening of the hives at most unfavourable degrees of temperature was very high, since the flying bees got quickly chilled, and many attempted, with failure, to return to their original hives. Nevertheless, sufficient number of bees were maintained to secure comb building. In thirteen days, a respectable worker comb with capped stores was available on round-ridged metal foundation, and others were in the course of development in proportion to the bees present, and which were densely clustering, so many of them acting as an insulating screen to the wax builders, which occurs also during the season, but which is bound to become exaggerated in cold weather, that is normally unsuitable for wax building, unless the bees are obliged to do so, as shown by this experiment.

After making every possible allowance for experimental fallacies, one cannot escape from arriving at the following **conclusions** :—

(1) Bare metal foundation is acceptable to bees under highly unfavourable conditions. It is logical that it should be equally acceptable under average seasonal conditions. Nothing at all has prevented the bees from treating the foundation as a mere board, from building comb on the dummy feeder only, or even from entirely decamping. The latter would not have been the first of its kind to be recorded under winter conditions.

(2) Bees have a very acute sense of touch; and if round-ridged metal foundation is acceptable to them, it pays to utilise thick metal for the sake of greater solidity, rather than use thin sheets which would buckle, merely for the sake of obtaining sharp ridges. There is no disadvantage in having round ridges for the prints on the foundation, since firm pyramidal bases for the side walls would result through it.

(3) Wax foundation has obviously the claim for which it was originally introduced, namely to secure a maximum of worker cells and better, even, and movable combs, than secured otherwise. It has no additional claims, and we need not emphasise its failures. They are met with in every day practice.

(4) Non-poisonous metal foundation, such as one made of an aluminium magnesium alloy, will not in the least offend the bees by its odour, since it has practically **none.** It will further give them as equal facilities for a "grip" as presented by the glossy wax foundation.

(5) If the foregoing conclusions are to be correctly appreciated, the camouflaging of metal foundation (in the proper sense) by a wax lining or a spray would not only be an unnecessary practice, but also a wasteful one.

(6) The revival of a wooden core, or a metal one that would buckle and present gross disadvantages instead of improvements, is hardly fitting for the progress of the time, and is an unnecessary extravagance.

(7) The wintering of bees on combs constructed on metal foundation may be inferred from the successful wintering of bees on metal combs in North America. A wax comb built on metal foundation is but a metal comb, the metal cell walls of which have been replaced by waxen walls.

The experiment has served other purposes which we need not refer to here.

The disadvantages of the metal foundation, as with every other foundation, are limited to the absence of a ready made comb.

Its **special advantages** may be thus summarised; and although obvious to ourselves, may be profitably emphasised.

These are :

(1) its indefinite durability and re-use with reasonable care;

(2) its cleanliness and adaptability for sterilisation by boiling;

(3) its capability of bearing the weight of the heaviest swarm without buckling in hot weather (due regard being given by the manufacturers to gage selection);

(4) its solidity which, to a great extent, safeguards the lives of bees in transit;

(5) its regular usefulness, in the hands of the watchful apiarist, for securing a full complement of worker cells and truly even combs;

(6) its adaptability for the removal of queen cells without destroying the foundation;

(7) its saving of labour in fitting, by excluding wiring;

(8) its fitness to be produced and handled at any time, unlike wax foundation, which is brittle in cold weather.

The metal foundation may therefore rightly claim to be considerably in advance of the wax foundation, and to have served as an ideal compromise between the latter and the metal comb.

* * *

LEE'S WATERPROOF COVER.

This descriptive name was given to the outer casing of a W.B.C. hive made on the **non-plinth system** or rather on an **internal** plinth one. It was introduced by Messrs. James Lee and Son, over twenty years ago. As they remark, beekeepers of those days did not care for it. Hence it was withdrawn from their list. It is now offered as illustrated, under the name of **the Uxbridge W.B.C. Hive.** Its lifts and covers are square and dovetailed.

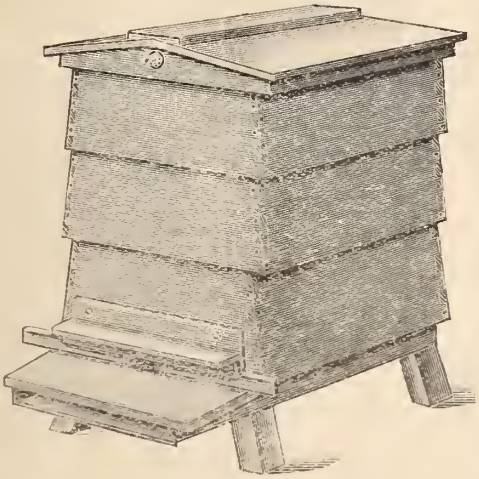
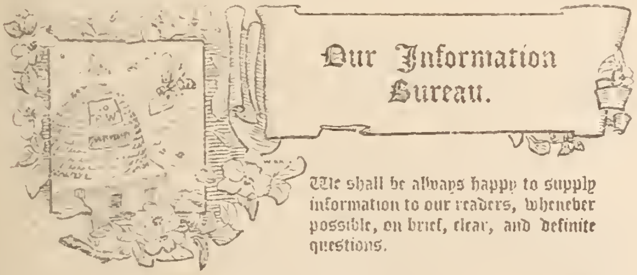


Fig. 28.—The Uxbridge W.B.C. Hive.

So far as a W.B.C. hive is concerned, this is certainly one of the best patterns on the market, and **the elimination of the plinth** is a decided improvement. We do not personally think much of the W.B.C. hive, although it has a few advantages which are not, however, monopolised; and while understanding the position of manufacturers who find it their duty to suit the taste of every section of beekeepers, we cannot sympathise with those who do not endeavour to cultivate a taste for better hives.

The external non-plinth arrangement is a splendid one. We would have adopted it ourselves were it not that it was created before our time, and it was fitting only for its originators to re-introduce it.

The House of Lee in the United Kingdom has a comparative prestige to that of Root in America. And whilst appreciating their wide-ranged production, it is still a mystery to us that they have not yet succeeded in defeating the demand for a porchless hive, as is practically the case with this one. To those who do not believe in "leaving bees entirely alone" in winter, the advantages of a truly **protective porch** to the hive entrance are only too evident.



Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

THE BLEACHING OF WAX FOUNDATION

Q. I am not clear about your answer regarding the discolouration of wax. Is wax made darker or lighter by the effect of light?

A. Pure wax is generally bleached by the effect of sunlight. Wax foundation (also made from pure beeswax) may occasionally be darkly discoloured instead of bleached when long exposed to light, owing to the presence of refining chemicals employed in the process of manufacture. The alteration of colour of the wax does not in the least affect its usefulness.

QUILTS AND VENTILATION.

Q. Supposing one entirely covers the brood combs with a non-porous quilt spread over a proper winter board, and well covered in addition, are the bees likely to be suffocated? Will the hive get damp? How can you prevent dampness in a hive?

A. The bees will not be suffocated and they may do very well. Ventilation will take place in this fashion. Fresh air enters through the hive door (which should be well guarded against draughts by means of a protective entrance shade or by means of a hinged door shutter similar to that originally introduced with the "Insulator Hive." (Fig. 29); it ascends in due course but slowly to the cluster and replaces warm air which is gradually diverted to the floor board of the hive, partly to mix with fresh air and partly to leave the hive; and the circle of ventilation is then retraced.

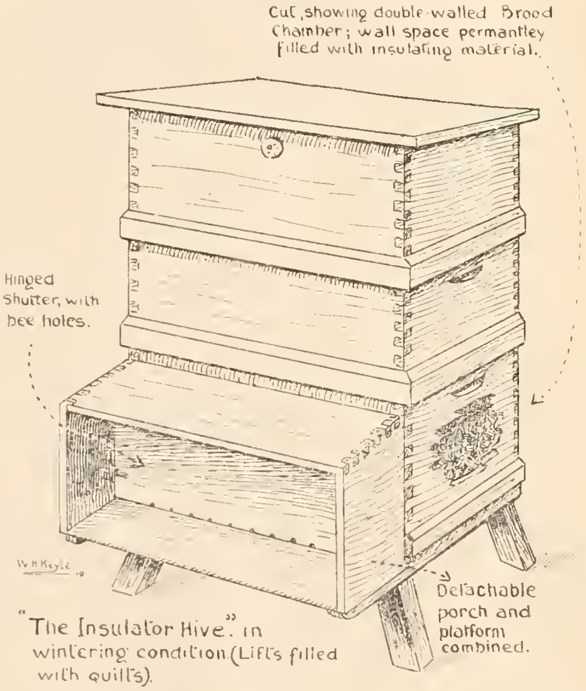
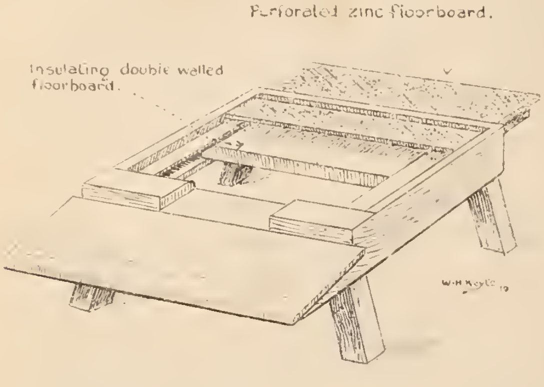

Cut, showing double-walled Brood Chamber; wall space permantley filled with insulating material.
Hinged Shutter, with bee holes.
W H Keyle
Detachable porch and platform combined.
"The Insulator Hive." in wintering condition. (Lifts filled with quilts).

Fig. 29.

It is a slow process which apparently is not efficient. Nevertheless, the preservation of the heat of the cluster is of far greater importance and must be maintained at all costs. Furthermore, the need of bees for a big volume of fresh air in winter is not true. Please refer to our notes on "fresh air and disease" in the June number of THE BEE WORLD, page 4. Again, you may depend that you will never prevent a certain degree of upward slow ventilation, however much packing you may place. Taking all these factors into consideration, the apparently inefficient ventilation will be often found quite sufficient for wintering, so far as the adequate supply of fresh air to the resting bees is concerned.

The question of ventilation, however, has another important aspect, namely its relation to dampness in the hive. A "proper winter board," as you suggest, is a good thing, and is far superior to the employment of strips of wood for spacing. The latter should be adopted as a forced necessity only when no better alternative is available, e.g., when candy feeding in a saucer and when lacking a winter board with a deep rim for creating the necessary winter space above the brood chamber. But you must not use a winter board which will favour the condensation of moisture over the cluster. Please refer to our observations on winter protection in the July number, page 40; also to our comments on hive moisture in the September number, page 72. The cleaning device of the "Insluator Hive" (Fig. 30.) to which reference is made may be found worse than useless if not properly constructed, that is if the principle of cheapness and not efficiency has been observed in its production.

With parts of the hive being at little or no more than freezing temperature in unfavourable circumstances, and during damp weather, condensation of moisture on side combs, on parts of the quilt, and on the side walls of the hive is inevitable. We would encourage condensation of moisture on the side walls of the hive in order to get rid of it, but not on the quilts; hence a non-painted wooden quilt is to be preferred to a glass one. Neither one nor the other however will much prevent the soft quilts that should be placed above it, for greater insulation, from getting damp. We have not infrequently used pure woollen blankets as top quilts, and although allowing a space between the under surface of the roof and the upper surface of the former, ideal dry quilts were never maintained. Dampness will find its way through the spacing between the roof and the wall of the hive (however insignificant this may appear) through the medium of outside air entering the hive from above. The best water-proof hive cover will not totally prevent this. It is essential therefore to emphasise that, **during winter, quilts need regular inspection.** The winter months to the conscientious apiarist do not in reality altogether present a resting season.


Perforated zinc floorboard.
Insulating double walled floorboard.
W.H.Kyle 19

Self cleaning, ventilating, and insulating floorboard device.

Fig. 30.

FORAGING TRIPS.

Q. How many times per day does an active forager pay her visits to the fields during the height of the working season? Does this matter in practice?

A. This is bound to vary according to the distance of the hive from the source of the nectar supply, the state of the weather, and the number of workers available at the time. When the colony has **many** foraging members and is **near** the fields, 25 trips a day, as calculated by Klaus, or even 40 trips, according to Zander, is no exaggeration. Under such conditions the bees are not inclined to gorge themselves with nectar, as when travelling a distance of, say, one mile or over. In the latter case they return to the hives with "swollen" abdomens, after enduring much trouble, and there is no wonder then that some workers will not undertake, under the circumstances, more than 4 trips on an average, according to Demuth.

The practical lesson to be learnt from this survey is that, provided the apiarist knows how to manage his bees and does not let them manage their own affairs, according to their sweet will, it pays to keep prolific strains, and especially those that will not avoid working in a slightly unfavourable weather, so that a **big force** of foragers will not be lacking at the right time. Old bees, at a disadvantage, may, when compelled, undertake nursing duties, but weak nursing bees cannot forage. And just as it is necessary to have a majority of young bees in the autumn, so it is essential to have an abundance of foragers during the working season.

INTRODUCING QUEENS.

Q. I assure you that my failures in queen introduction have not been broken by one success. It may be my clumsiness, as I have not kept bees till three years ago. I am always forced to fall back on queen cells. An expert friend of mine tells me, however, that there is nothing simpler and yet surer than the following method of queen introduction: Place the old queen for a day in a tubular cage like the one to which you refer in your August editorial, then replace her in the same manner for two days by the new queen; then release the latter. She will be invariably accepted.

Before I would feel inclined again to write to America or Italy for queens, I would like to know whether you think this method is likely to be successful in my clumsy hands.

A. We have already given sufficient notes on **the essential factors for successful queen introduction.** The method described is no doubt workable, but it is not the best, nor is it free from risks. A far better method is the one which we suggested in our editorial for the September number and in commenting on the letter by Mr. Watts. It will truly save time, whilst the apiarist is busy, and it will even tempt him to ignore for a week the newly introduced queen...... It will invariably succeed in defeating the hostility of the bees to any new queen.

Q. Using the pipe cover cage for queen introduction, how would it be possible to fix it over a metal comb?

A. It is not an easy matter with a metal comb newly employed. It has to be done deliberately in a warm room (e.g., a grafting room), after shaking the bees off the comb on the hive platform. The queen has to be disabled by her previous immersion in cold water. Make **careful** use of molten wax round the edge of the cage. The bees will more securely fix it when the comb is returned to the hive. But considering that there are other good methods of queen introduction, this trouble need not be taken. It will not be experienced, however, with wax combs built on metal foundation.

HIBERNATION.

Q. Do bees truly hibernate in winter? If so, is hibernation to be encouraged or discouraged?

A. No. We should not imagine any colony to be able to survive a cold winter were they to undergo true or complete hibernation. Bees do not naturally hibernate in temperate climates, although hibernation—an enforced form of natural rest during a particular time which is the food shortage period—is supposed by some naturalists not to be directly influenced by heat and cold, the general association of it with the cold season, being merely a wise adaptation and selection on the part of Nature.

The so-called "semi-hibernation" of bees in a cold winter is an **artificial** necessity which may be seriously harmful in being the fore-runner of **avoidable starvation.** The popular belief that bees will do well if wintered at a uniform outside temperature of zero degree centigrade cannot be too strongly condemned. Six degrees centigrade is a more reasonable proposition. When bees are obliged to undergo a prolonged confinement, their food ration must not be more than the safe minimum necessary to maintain vitality, which is dependent on a favourable clustering temperature. To guarantee this minimum of food consumption, by means of maintaining a cruel degree of a chilling temperature, will only result in either a heavy mortality or in starting a form of disease due to **metabolic poisoning,** through their desperate effort to counteract the unfavourable temperature by abnormal activity and consequent over-feeding. The boastful claim of the negligent apiarist that in spite of his carelessness his bees have managed to "come through" the winter (when all the time the "credit" is due to the poor bees for accidentally saving the queen and a handful of their comrades) is really pitiful.

Now, to regulate a favourable minimum temperature for winter protection, there are two courses open: (1) the utilisation of **artificial heat,** which, in the present state of the industrial revolution, is entirely out of the question for the smallholder; (2) to devise better methods of **insulation** compatible with hygienic management, so as to preserve the heat of the cluster without appreciably hampering ventilation.

To encourage "hibernation" is to pass a death sentence on bees. "Contented restfulness" is the state of order that has to be encouraged.

Although we have voiced these views for months in the Bee Press, we are not surprised at the query put to us, seeing that with very few exceptions of the mind of Mr. Prior, no one is willing to acknowledge other than the old theory of wintering, handed from one generation to the other through non-original literature on bees.

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their school or nationality, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

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⁂ Membership of the **Apis Club** is open to all practical apiarists everywhere, as well as to all lovers of the Honey Bee. Annual Membership Fee: 7s. 6d., and includes free delivery of this Magazine, which is issued only to members of the **Club**.

Vol. I. No. 6. NOVEMBER, 1919. Monthly.

Editorial.

LEGISLATION It is gratifying to learn that the B.B.K.A. is purposely avoiding, at present, offering any suggestion on the form which legislation for bee diseases should take in this Country, and is encouraging all critics to express their views, so that should the Board of Agriculture be finally induced to recognise the need for legislation, such criticism will be seriously considered in shaping any legislative measure.

Furthermore, we are assured that there is no question of "signing a blank cheque," by appealing for the signature of the petition for legislation, the latter being merely looked upon as a recognition of principle and not of form. Also that the Association is quite prepared to suggest a measure, but that it prefers not to do so, in order not to fetter the independence of its members, apart from non-members, in their criticism.

For the sake of encouraging this democratic spirit, we have pleasure in offering a prize of two guineas for the best constructive criticism of the 1912 Bee Diseases Bill. What are the faults of the Bill? What are the best amendments that will render legislation the boon it is wished to be?

The competition article should not exceed 800 words or about a page of the B.W., and should reach us not later than January 31st, 1920. Discussions not bearing on this subject, and especially arguments of a personal character, will be considered a disqualification.

Mr. Gilbert Barratt, Secretary to the **Sheffield Beekeepers' Society,** has kindly consented to act as literary judge, without necessarily agreeing with the views of any competitor.

IMPARTIAL PUBLICITY. Impartial Publicity never means unqualified publication, which would amount to literary corruption. Its meaning is so obvious and is well understood generally, that comment on it appears to be needless. It has been suggested, however, that a free Bee Press should publish all that it receives. This is no freedom, nor is it a help to either reader or editor. It would only indicate a policy of trying to gratify individual writers, whether their contributions are serviceable or otherwise.

Fortunately, we have not received a single literary communication that we did not sufficiently appreciate to publish or to intend to publish, but this does not lead us to a non-sympathetic attitude towards colleagues whose limits of space hamper them. When an editor is overwhelmed with literary correspondence, some of which may not be at all literary, but of a personal character and not fit for publication, we can well understand his perplexity. Then again, every editor has to consider the standard of his paper, the literary value of the contribution, the most fitting opportunity for its publication, and to use his discretion in arriving at the best combination of literature for a certain number, otherwise a journal may as well have no editor, and the production left to the convenience of the printers, through the courtesy of its contributors......

Impartial publicity in journalism, on the other hand, demands an equality of opportunities of expression to all who are qualified to do so, irrespective of personalities and opinions, and provided the subject dealt with is not foreign to the publication concerned. Whilst allowing the editor to use his judgment in exercising his duties, he cannot be excused in using the blue pencil in such a way as to affect the aim and general meaning of an article. This cannot be tolerated. It is worse than suppression, and is never met with in a respectable journal.

As an example of impartiality in publicity, to the benefit of the Cause for which we are labouring, the article on "Bee Diseases Legislation" which appears in this number is a vivid one. Although received just as we were going to press, its importance justified a further delay in issue; and it was given precedence to an important contribution dealing with a less urgent question. We do this willingly, although the views of Mr. Barratt are in parts much against our own views, whilst in other parts both opinions are in full agreement. We would be quite unreasonable were we to deny him the right to express his opinion just as he wishes. Similarly, we had no hesitation in delaying a valuable contribution from none less than the Secretary of the **B.B K.A.,** for the simple reason that we had more immediate topics to deal with. We would have delayed it longer, had we thought it more serviceable to do so. Its writer, as an able journalist, who would naturally sympathise with us in our difficulties, would not have been offended.

May we hope these remarks will serve a worthy purpose?

THE TRICKS IN CANDY FEEDING. The tricks in candy feeding are not many and are very simple to grasp, yet these make all the difference between a measure of success and complete failure, so far as the food factor is concerned in the wintering of bees, should the apiarist be forced to resort to candy feeding. On the other hand when these factors are fully appreciated, the beekeeper will still be within the bounds of uncertainty.

Wholesome cane sugar candy for bee feeding should possess the following qualities: (1) absence of harmful impurities, in shape of poisons, irritants, non-digestible ingredients, etc.; (2) liberal softness which is not only temporary; and in this respect the possession of a **little** appreciable hygroscopic characteristic is not to be considered a disadvantage; (3) non-liability to ferment when dissolved and stored by the bees; and for this reason the addition of a safe preservative is necessary.

We consider the making of good candy a speciality. Its formula will be found more by experience and training than by adhering to text book directions. And it is better left therefore to expert hands and scientific machinery.

We further consider successful candy feeding mainly dependent on the ability of bees to dissolve it and store it as syrup, during the intervals of favourable or comparatively favourable weather. The contention that bees will **eat** such a candy supply before touching their comb stores is not correct, nor is it correct to suggest that, prevented from dissolving and storing the candy by inclement weather, bees can generally prosper by feeding direct on it. They will not, and the principal reason is that they do not pass the food to one another to the exaggerated extent generally depicted. Once the colony is depleted through high mortality from avoidable starvation, the survivors will not be able to combat the hardships of winter, whether they possess good candy or otherwise. Good candy in itself is not a bad food for bees, but when the majority of the bees cannot get at it, little wonder that a high mortality occurs. **Soft candy** for the use of bees should be one that would be generally described as **rather** soft by the apiarist, provided it would maintain this quality, and not dissolve and drip over the cluster, an undesirable feature due to wrong methods of production. This liberal softness is a partial guarantee against the scarcity of moisture in the hive during winter which sometimes happens. A wooden plate to hold such soft candy in conjunction with a suitable winter board is necessary. But a better guarantee against a misfortune is to avoid using candy at all as a choice food, and when used as a compulsory diet, one should not ignore the risks involved even with the best candy, not through the candy itself, but through unfavourable weather preventing the bees from getting at it, or through the lack of moisture for dissolving it. Regular inspection once a week and artificial moistening with medicated water where necessary, or substitution of fresh candy, may be advisable.

Ripened stored syrup has the advantage over candy of being **already** digested (although most of the candy may be artificially made to consist of invert sugar) and already broken up into a solution of simpler sugars, and of being also conveniently accessible to the bees. In this connection, it may be worth mentioning that our winter observations do **not** show that bees do not cluster well on combs of stores, nor that empty combs are necessary for the cluster, "because some of the bees stay within the cells." We have not met with such a state of affairs, which we do not believe to exist. On this basis, there is nothing wiser than wintering bees on deep large combs, well loaded with good stores which would be readily accessible if a winter passage has been originally provided.

It has been suggested that syrup has a greater dietetic value than candy because it contains a trace of albumen. We do not think this is other than indicative of the presence of a digestive juice.

To sum up: the success of candy feeding in winter, as an emergency diet, is mainly dependent on its liquefaction and storing, during periods of favourable weather, in sufficient quantity to provide for the requirements of the colony during inclement weather. For this reason there is a big element of uncertainty in it which is no indication however that the candy itself is unwholesome. The beekeeper can do no more in an emergency to avert starvation than the early supply of well-made candy of the maximum softness permissible, and its regular inspection.

Were a trade in **non-infected** standard combs of capped honey or syrup for the brood chamber use to be inaugurated by reputable apiarists, for the benefit of needing beekeepers, a better alternative would then be available, should an emergency arise.

INDOOR WINTERING OF NUCLEI.

Mr. Bryden's brief and instructive lecture at the recent **B.B.K.A. Conversazione** on the subject of the indoor wintering of nuclei, presents, so far as we are aware, only one point of difference from American teaching, namely, his preference of wintering indoors weak nuclei only, leaving strong stocks to winter outdoors, presumably because he thinks the latter are sufficiently safe in the open. The lecturer deserves to be congratulated on his courage as an additional exponent of views which are quite unpopular in this Country. He considered three regulated factors essential for successful indoor wintering, namely: temperature, ventilation and darkness; and he claimed for the method the following advantages: (1) it saves the bees; (2) it saves the queens [i.e., instead of loss (?) through uniting, if outdoor wintering is to be adopted]; (3) it saves fifty per cent. of food; (4) it saves the hives; and (5) it saves labour.

Indoor wintering of bees in America is not ideal. Its measure of success is dependent on careful inspection and control, and if wintering methods in this Country have to be revolutionised as we have ourselves advocated some time ago, we ought to improve on existing methods and not to be contented with imitation.

Ideal dry housing is incompatible with ordinary cellar wintering, and for this reason the latter is not to be admired. An **over-ground** shed is much to be preferred. It can easily be ventilated and darkened at will, and could be maintained at the minimum desirable wintering temperature by either **artificial heat** or a current of cold air. The accompanying two illustrations of the type of winter apiary which we prefer (Figs. 31 and 32) are self suggestive.

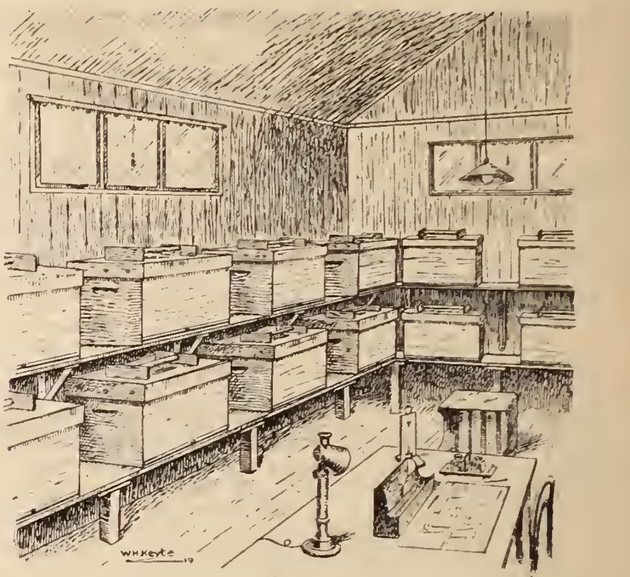


Fig. 31.—Winter Apiary: Partial Internal View.

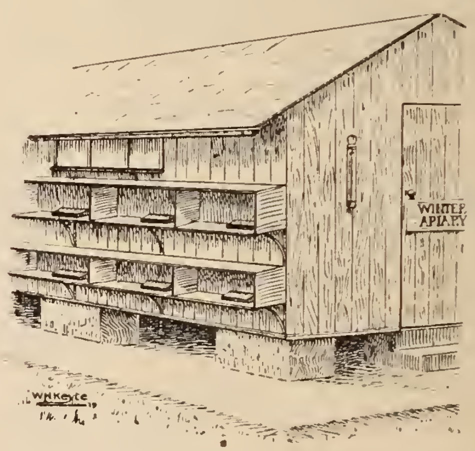


Fig. 32.—Winter Apiary: Partial External View.

The new factors which we would like to see introduced in indoor wintering are: **(a)** the recognition that however little food bees may be induced to consume through a controlled minimum temperature, it is highly desirable for the maintenance of their good health to encourage cleansing flights by artificially raising the temperature of the winter apiary to, say, 65° F., when outside temperature is at about 50°F. and the wind is low; and when this object is accomplished, to quickly lower the temperature again; **(b)** that however strong a stock may be, it is bound to suffer through exposure, which is inseparable in cold Countries from out-door wintering, and therefore it would be advisable to adopt indoor wintering as a general policy, since the aim is to recover the stock in a fairly strong condition in the spring and not as a band of witnesses to a big mortality; for this purpose special hives suitable for outdoor as well as for indoor accommodation have to be employed; **(c)** the great desirability of having the temperature of the winter apiary absolutely under scientific control by the employment of regulated heating and cooling appliances, otherwise indoor wintering would not be an inviting enterprise on a large scale.

Original Contributions.

Detecting the Source of Honey.

By WILLIAM HERROD-HEMPSALL, F.E.S.
Secretary, The British Beekeepers' Association.

As a rule in this Country, the surplus honey from the bees is obtained from mixed sources. This is necessarily so, as large crops of one particular flower are the exception rather than the rule.

However, there are certain crops grown in sufficient quantities at some periods of the year, to enable the bees to store in the surplus chambers mainly from this particular source.

As I find the majority of beekeepers are unable to distinguish the various kinds of honey, the following notes will probably enable them to identify the principal varieties.

The chief points of good honey are: Flavour, Aroma, Density, Colour and Brightness.

Flavour: This is often a matter of palate; for instance, the Southerner does not, as a rule, care for the bitter, sweet, and strong flavour of heather honey, whereas the Northerner does; and in his turn, the latter regards the delicately flavoured Southern honey from clover or sainfoin as "sweet but otherwise tasteless stuff." Honey from buckwheat is obnoxious to most people, but preferred by a few in this Country, while in Holland and Sweden, it is much sought after. The Eucalyptus flavour of Australian honey appeals to the people of that Country, and it is not honey to them unless this is present, whilst people in the United Kingdom generally object to it, since it reminds them too much of a medicinal preparation; and so, if space permitted, one could go on enumerating the vagaries of flavour.

Aroma: This is often redolent of the flavour from which the nectar is obtained. At times very pungent, as from heather, sainfoin, hawthorn, mustard and lime, while at others, faint and almost imperceptible.

Density: Climatic conditions and soil affect this to a certain extent. In a very damp season it is more liquid than in a moderately dry one. Honey gathered early in the season is generally more dense than that gathered later, and does not granulate so quickly. Soil also has an influence. For instance, clover grown on a clay soil yields a thicker honey than that grown on a sandy one.

Colour: This is affected by the flower from which the nectar is obtained. There is a fashion in food just as in clothes, and while the Southerner prefers a light honey, the Northerner swears by the dark coloured. To my mind it is immaterial, so long as flavour and density are good.

Brightness: As a rule, honey properly ripened and extracted even in the case of the dark ones, is bright in appearance. Dullness is caused by unripeness, the admixture of pollen, or a very slight quantity of honey dew. Slight heating will often improve a dull honey.

The characteristics of the principal varieties of honey produced in the United Kingdom may be thus summarised:

(1) HEATHER:

Heather blooms late in the season, in August and September, when all other flora are over. Heather honey is, therefore, one of the crops which can be secured unmixed with that from other flowers. On account of climatic conditions, a good harvest is secured about once every three years; hence the price is usually about double the price of that which the Scotchman terms "Flower Honey" to distinguish it from the honey of his native land. It is obtained in the North of the British Isle; and although there are a few exceptions such as Hampshire and Devon, I consider that no good Heather Honey is obtained south of Derbyshire.

There are two kinds of heather honey: (a) that obtained from the true Heather or common Ling (Calluna Vulgaris), and (b) that obtained from Bell Heather (Erica Cinera).

Pure heather honey is peculiar in that it never granulates.

(a) LING HEATHER:

Flavour.—Bitter, sweet, and strong, as the flower smells.
Aroma.—Pungent of the Moors in September.
Density.—Gelatinous; so much so, that it cannot be extracted by centrifugal force, but must be pressed out.
Colour.—Dark to light amber.
Brightness.—It never assumes the clearness of "Flower Honey," as on account of its density, the air globules impregnated in pressing never come out, but give a beautiful effect to the honey by reflecting the light-like drops of dew in the sunlight.

(b) BELL HEATHER:

Flavour.—Not quite so strong as Ling.
Density.—Not gelatinous, and can be extracted in the usual way.
Colour.—Port Wine.
Brightness.—Good.

(2) CLOVER:

Flavour.—Delicate, of the flower.
Aroma.—Delicate, of the flower.
Density.—Medium to excellent, according to season.
Colour.—Varying. Light amber to water white.
Brightness.—Usually good and sparkling.

(3) FRUIT BLOSSOM:

Flavour.—Rather strong.
Aroma.—Very pronounced.
Density.—Very good, so much so that it is often difficult to extract.
Colour.—Dark.
Brightness.—Medium.

(4) SAINFOIN:

Flavour.—Delicate.
Aroma.—Pronounced; and if stored in large quantities, it is objectionable when first opened, but tones down upon exposure.
Density.—Very good.
Colour.—Light amber.
Brightness.—Sparkling.

(5) LIME, LINDEN, OR BASS WOOD:

Flavour.—Tinged with peppermint.
Aroma.—Delicate peppermint.
Density.—Only medium.
Colour.—Slightly green.
Brightness.—Only very medium.

(6) BUCKWHEAT:

Flavour.—Very strong.
Aroma.—Pungent.
Density.—Poor.
Colour.—Dark, often almost black.
Brightness.—Poor.

(7) MUSTARD:

Flavour.—Strong, often with a slight burning sensation when swallowed.
Aroma.—Rather pungent.
Density.—Good. It is the quickest granulating honey in this Country. On exposure to light, it will granulate in three days. It also granulates very quickly in the hive, and should therefore be extracted as soon as sealed over.
Colour.—Pale amber to water white.
Brightness.—Good.

(8) HAWTHORN:

Flavour—Fairly strong, often mistaken for heather mixture.
Aroma.—Pungent.
Density.—Very good.
Colour.—Dark amber.
Brightness.—Good.

(9) SYCAMORE, OR PLANE TREE;

Flavour.—Strong, of the flower.
Aroma.—Strong, of the flower.
Density.—Medium.
Colour.—Dark Green.
Brightness.—Poor.

Good honey is often spoilt by the mixture of nectar from ragwort (S. jacobea). This flowering weed grows on moorland and marshes; and if its flavour predominates, the honey is unsaleable.

Section Honey naturally possesses all the qualities of extracted honey.

There is a **difference in the colour of the cappings** as follows:—

(a) heather: dead white; **(b) sainfoin:** pale to deep straw colour; **(b) other honeys** have a brightish white capping.

[In favouring THE BEE WORLD with this valuable practical article, despite his over-occupation, Mr. William Herrod-Hempsall, who is writer of the well-known authoritative work: "**Producing, Preparing, Exhibiting and Judging Bee Produce,**" has most kindly prefaced his article with an address of welcome to this magazine and with friendly words of encouragement to its humble editor. Other men of leading position, both at home and abroad, have spontaneously acted in the same kind and generous spirit, and we have duly published a general acknowledgment of their gentlemanly attitude, and our full appreciation of their liberal kindness.

The striking feature about Mr. W. Herrod-Hempsall's communication is that it was sent **after** the appearance of our article "A Lesson in Journalism," in which we ventured to suggest that the time has come for the whole Bee Press to stop party duels, and to labour for co-ordination, amity, and better forms of education. Such duels were a degrading feature of the **whole** British Bee Press in the past, and they are not now altogether dead.

Our frank statements afforded the acid test for estimating the qualities of open-mindedness, forbearance, and sincerity of faith in our leaders. And we are certainly gratified that our esteemed contributor appreciated the motive of our criticism, and did not descend (as we never expected) to the political tactics of considering our remarks a sign of opposition on our part, which justifies his hostility......Instead, he has rightly made the cause of **The Apis Club** and THE BEE WORLD his own cause as we expect from all other leaders, and has given our labour a most disinterested and repeated review in both **The British Bee Journal** and **The Beekeepers' Record.**

W.H.H., as proprietor of the most widely read two bee magazines in this Country, is in no need of our assistance. It is within his power to labour for the destruction of our work should he wish it. But he declares that his principles mean construction and tangible co-operation in every useful beekeeping scheme. Whilst fully appreciating his sincerity, we, on our part, have no hesitation in declaring that if our work is not fit to survive the attacks of one leader or the other, then it is not worthy of a defence. If a testimony is needed in order to show that a rightful course is rightful, then such a course is certainly a poor one in its lack of inspiration. We do not care therefore to publish letters of appreciation (much as we value the good will of the writers, both great and small)—a practice which amounts to nothing more than a form of indirect self publicity, as if to influence the judgment of the readers.

On the other hand, the kind message received from W.H.H. may be rightly published, at least in part, for the purpose of showing the true character of the man who seems to be held responsible for the blunders of some of his disciples. More than one of these, imbibed with hopeless partisanship, refused to help us just because of our recognition of the services of others who hold divergent views from theirs, who may have committed or are still committing mistakes, pardonable or otherwise, but whose literary and practical ability, nevertheless, cannot be ignored by any honest man. The same feeling, we much regret to say, appears to be operating in Ireland just as strongly as it is operating in Great Britain. We personally owe much to the teachings of several British leaders in beekeeping, that a smack from one or the other of them will not hurt us. It will only fill us with regret. We would sympathise with any one of them if he were wrongly impressed and misguided by manœuvres of ill-advisers, who lack even the courage of expressing their opinions in print, and would like to shift the responsibility of their short-sightedness, their selfishness, and their petty jealousy to the pen of one leader or the other. We are glad that W.H.H., amongst other leaders, is candid enough to acknowledge our sincere motives, and we trust that our labour will not be successfully misrepresented in any quarter. It will not be our fault if such a traditional misrepresentation will ever succeed.

Our esteemed contributor kindly remarks: "I must congratulate you on your admirable magazine. Though delayed through absence abroad and pressure of work, this message is not the less sincere. The paper is unique, high in tone, and free from extraneous matter and recriminations. **Beekeepers cannot have too much education, and the more periodicals we have devoted exclusively to bee culture, the more we shall succeed in our calling.** There are a great number of people who keep bees who do not read anything at all on the subject, and ofttimes are not even aware that literature on beekeeping exists. The greater number of periodicals we have, the more likely are they to come into touch with them and receive that education and assistance which they sorely need. I trust, therefore, you will receive that support and encouragement which your unselfish, unbiassed, and financial devotion to the craft so richly deserves, and that you may soon be restored to perfect health and remain amongst us to continue the good work of uplifting the industry of beekeeping to the highest possible pinnacle. The Britisher is undemonstrative and phlegmatic, and you will receive (as I well know) many setbacks and disappointments. But all the time, although it may not be apparent for the moment, good work is being done, and you will, in due course, reap the reward of your unselfish devotion and labour. As the owner of contemporary periodicals, I extend a hearty welcome to you, and any assistance I can render is entirely at your service. I am sorry to see that you have to make repeated appeals for practical sympathy to enable you to develop your work, and would here submit, for consideration and adoption, the following principle:

A poor man walking along the street carrying a basket of eggs came into collision with another pedestrian. The result was that the basket fell to the pavement and the eggs were broken. As usual, a crowd collected, and the usual verbal expressions of sympathy were given by a large number of the spectators. One man, a 'quaker,' stood for some minutes without saying a word. At last he spoke thus: 'Friends! I sympathise with this poor fellow in his misfortune to the extent of ten shillings.' I am not surprised at the failure of promises of support. To every appreciative reader of THE BEE WORLD who is aware of your aims, of your labour and perseverence, of the obstacles in your way, and of the existence of the development fund of the magazine, this legitimate question may be put: **What is the cash value of your sympathy?**"

We speak of people as we find them. Further comment on the message of appreciation and encouragement from Mr. W. Herrod-Hempsall to a constructive critic, who holds so many divergent views from his, and with whom he has hardly come into personal contact, is certainly needless.—Ed.]

Bee Diseases Legislation.

By GILBERT BARRATT,

Secretary, The Sheffield Beekeepers' Society.

At the request of the Editor, the following notes on Legislation have been written.

At the outset, it may be conceded, I think, that no sensible beekeeper objects to sane legislation: the need of it is patent to every-one except those "who have eyes and see not." No, the objection by the thoughtful man is in the administration of it. If a Bee Diseases Bill becomes law, then it is a sine qua non that it must be administered; but by whom are the administrators to be appointed? Naturally one thinks of the Board of Agriculture, but that body, by its countenancing the issue of the fatuous and illiterate screeds, in the shape of leaflets which have excited the derision of two continents, has proved its entire unsuitability and ineptitude. One would like to see the **B.B.K.A.** entrusted with this task, but a survey over many years, fails to find any signs of that body furthering, in any way, the interests of the average beekeeper.

Obviously, it is difficult to deal with this subject when not the faintest indication of the proposed Bill is known, also the futility of endeavouring to obtain, by advertisement or otherwise, any knowledge as to who is against legislation, a question that cannot possibly be answered until the character of the proposed Bill is indicated.

If the proposed Bill (and the Government hold out no promise of such, because of the lack of unanimity amongst beekeepers), includes inspection, then, naturally, the job seeker would clamour for appointment, irrespective of his qualifications, and although his persistence might not secure him the post, yet modern prototypes of the importunate widow are not wanting.

An excellent suggestion, and one which would commend itself to the "moderates," is outlined by a correspondent in the **B.B.J.** for November 27th, in which a modification of the Diseases of Animals Act, and the putting of the onus of notification upon the beekeeper, is urged; this would meet the wishes of all beekeepers except those who have a personal interest in the passing of a more drastic Act. If, on the other hand, an inspection clause is incorporated, then a study of the literature of America, where inspection is almost universal, will prove illuminating. Apicultural conditions are much different from those obtaining in this Country, but human nature is the same the world over. In the Januuary issue of the **Western Honeybee**, the following statement appears, "foul brood, **together with unwise inspection,** has decreased the number of colonies in one county in California by 50%. Here is food for serious thought, especially those who have seen the trail of death following the visit of the county 'expert' in this country."

An article of unusual interest, entitled "Force or Education," from the pen of the sub-Editor, Mr. Frank Pellett, appears in the February **American Bee Journal**. He says "......in passing bee laws, we have been so frightened by the presence of disease, that we have put more power into the hands of the inspector than it was ever designed that any one individual should hold. We are living under a constitution which gives to every man the right to be heard, and provides that no individual shall be deprived of his property without due process of law......many of these laws go so far as to give the inspector authority to establish a quarantine against the sale of honey from infected areas.......in no other department of American activity do we make it possible for one man to judge the merits of a case, assess the penalty and execute the sentence...... there should be laws to govern the movements of diseased apiaries, as a matter of course, but they should be administered in the same way as other laws." Mr. Pellett, having been a Government inspector for five years, is entitled to be heard with respect; he further urges the necessity of education, rather than the "big stick" and adds ......"let us warn the beemen in these States, that they are better without any laws at all than they would be with the stringent provisions now on the books of several States"......"where new laws are to be passed, it is far safer to make a move towards an educational officer rather than toward another policeman...... if the beekeepers will strive to get a beekeeper with expert knowledge of diseases into that department, he will be of far greater service to the industry than half-a-dozen inspectors with police powers." Space forbids further extracts from this valuable article, but in an editorial comment Mr. Dadant says, "beekeepers should consider very carefully the result of improper administration before asking for stringent laws

In almost every line, better results can be secured by education than by force. The short cut to the eradication (of disease) is by educating the mass of beemen in proper treatment. One good teacher is worth a dozen policemen." In the May issue of the same journal, Mr. Pellett says, " I have heard it charged in some cases that healthy bees have been destroyed by the inspector; there are cases reported where bees were destroyed by an inspector to get them out of the way of somebody's range. Under the laws in several States, it would be easily possible for a misguided inspector to ruin the beekeepers in his territory, and if the reports are correct, this very thing has happened in many cases. The beekeeper needs to be protected against the incompetent inspector as well as from disease." It is the peril of this sort of thing that makes the thoughtful man wonder whether " it were better to bear the slings and arrows of outrageous fortune, than to fly to ills he knows not of," and to fight tooth and nail against any legislation. So long as no definite scheme is promulgated, so long will any Bill be fought by the opposition by every means in their power. As cited above, and by our Editor, education and research will be far more effective.

Unfortunately, the Board of Agriculture, which one would naturally expect to lead in this matter, have displayed an ignorance and incompetence, so complete, and so amazing, that it is difficult to hope for any help from that quarter. A committee was indeed appointed, for the study of bee diseases, but this was evidently a device for marking time by the Board, as so far, not one word of their deliberations has appeared in the Bee Press, and for all intents and purposes they are dead, unwept, unhonoured and unsung.

One would have thought that the **B.B.K.A.** would have drafted a measure for discussion and criticism, seeing that they appear as the movers in the request for legislation, but this institution has probably outlived its sphere of usefulness. The **N.B.A.** seem in no better case, and therefore the only thing left is to rely on the initiative of local Associations. To this end, let beekeeping be de-centralised, as suggested by the progressive **Kent B.A.**, each Association bending all its energies to education, so that if, or when a Bill is brought forward, enlightenment will have taken the place of indifference and hopeless apathy, and the only Statute that will have any chance of success, will be one in which the job seeker, the personally interested and the so-called expert will have neither lot nor part.

[We are greatly indebted to Mr. Barratt for his helpful contribution, because of more than one reason. Mr. Barratt is a very busy man; nevertheless, he is good enough to realise also how busy we are, and at what sacrifice we are endeavouring to serve the best interests of beekeeping. Remembering that " where there's a will, there's a way," he did not hesitate to give us his help, which we much esteem. By so doing, he assisted also in maintaining a non-party character to this magazine, since we have no pleasure in voicing only our own point of view. If we did so, this paper might as well not exist. We would like to give other points of view at least equal publicity; but when some able writers who disagree with us prefer to stand aloof and grumble, in spite of our cordial invitation to their writings, naturally we cannot help them. We have no influence over such a curious attitude, nor can we influence the tactics of some partisans who delight in inventing imaginary attacks as an excuse for unworthy hostility instead of decent co-operation.

As Shakespearean scholars, those able writers who have urged on us that the journalist is " nothing if not critical," and that an editor should not merely be a " dummy " or a proof reader, have little thought of the temperament of the Craft. Constructive criticism is certainly unpopular. Destructive criticism—at best, an outcome of personal and commercial partisanship; and at worst, a form of sophistry — is still well supported. These remarks will perhaps surprise American apiarists, who have not followed the factors that have laboured for creating and maintaining dissensions amongst the British Beekeeping Community for the benefit of a few, and so retarded the progress of the Industry in this Country. But when our friends across the Atlantic come to remember the reasons for their political isolation, they will not be surprised to learn that this chronic European disease of alliances and intrigues has made its raid even on bee literature.

So much for a lament. Now for our contributor's views, which we fully support in parts. Mr. Barratt has a clean pen, and he does his best to define his statements. We know how much he welcomes constructive criticism, and how ready he is to modify his views according to evidence and reason. We have real pleasure therefore in commenting on his notes.

Let us say at once that the 1912 Bee Diseases Bill in its ambiguity, in the autocratic power which it confers on local authorities without due regard to the special features of bee diseases, in its practical exclusion of the influence of the craft in protecting their own interests, and in its hopeless imitation of foreign legislation without taking into consideration the failures of the latter, is not by any means a measure that commands confidence, although had it been passed then, its glaring faults would no doubt have quickly opened many eyes, and would have forced the Government to follow a constructive policy as has been pursued at last by the development of its present re-stocking scheme. The contention held by some beekeepers that had the 1912 Bill been passed, even in spite of its defection, it would have not retarded the progress of the craft, is not lacking therefore in reasoning grounds. We are not dwelling however on the past. We are concerned with the present; and to our mind the present official re-stocking scheme, in the absence of legislation, is quite incomplete. The Government which had the courage and enterprise to introduce its restocking scheme in 1919 should not fail in meeting the wishes of the majority of the Craft regarding legislation in 1920. This does not mean coercing the minority whose points of view should receive unbiassed consideration.

The Board of Agriculture, or in other words the Government, are naturally responsible for safeguarding the best interest of beekeeping from selfish or ignorant offenders. If they want to avoid this responsibility, as they appear to do " because of the lack of unanimity amongst beekeepers "—an absurd excuse which is totally untenable —it is most unwise to encourage their apathy. The mistakes of present or past officials, the risk of unqualified people succeeding by chance or otherwise in securing responsible posts, and the like, are no arguments against the advisability of **forcing** the Board of Agriculture to acknowledge their responsibility and to act upon it in a democratic spirit.

As the Government are proposing **no** Bill, and the **B.B.K.A.** prefer to leave to the craft to discuss the faults and merits of the last Bill, so that the constructive critical views of the mass of beekeepers may be known by the Government in shaping a future measure, constructive discussion is to be welcomed and should be inaugurated in the whole Bee Press of the Country.

The authoritative American views on the failures of inspection, which Mr. Barratt has kindly troubled to compile, should be carefully studied and appreciated. We have pointed out in the **B.B.J.** some months back, that unless the proposed State supervision of apiaries is fundamentally educational, it will do more harm than good. In fact, the scheme should be supplementary to the re-stocking scheme, and both incorporated in one programme.

The **B.B.K.A.** is in no need of our defence. We are referring of course to the whole association, which comprises the Kent as well as many other county and district Associations. The Council's officers are always at the mercy of the voting power of the members; and if the latter are dissatisfied with their officers or even with the rules of the Association, nothing prevents them from making the desirable change. The **B.B.K.A.** cannot be considered to have " outlived its sphere of usefulness " unless we admit that professional and craftsmanship unionism is a weakness and a failure, which is certainly not the case. We presume Mr. Barratt is referring to the council of the Association and to its policy; but the council is composed of mortals who are not infallible, and who should not be tolerated if they cannot perform their duties to the satisfaction of the members. Such a powerful organisation as the **B.B.K.A.** cannot be buried alive. It can only be further improved. In fact, the more the opposition to the **B.B.K.A.** grows, the more the membership of the latter appears to develop beyond all proportions. These facts cannot be ignored.

As for the **N.B.A.**, we need only add to our remarks in the July number of THE BEE WORLD that no association which lacks the necessary funds and voluntary workers can perform serviceable duties by means of literary support alone. For instance, we have offered many months ago two colonies for the establishment of an experimental apiary for the Association. Up to this date these have not been asked for, simply because the Association lacked and still lacks both the ground for an experimental apiary as well as the workers. The character of the **N.B.A.** is one of co-operative production and distribution amongst beekeepers, and partly educational. In its sphere of activity, it was hoped that it might also create amity amongst different sections of beekeepers; but between suspicions and rivalries its task was not easy. In any case, it was never meant to replace the activities of other Associations, but rather to co-operate with them. The **N.B.A.**, which we understand is developing by the growth of the **B.F.C.A.**, still retains its original character and can hardly replace, therefore, other Associations in the expression of a guiding opinion on the question of legislation.

The idea of **decentralisation,** as introduced not long ago by Mr. Judge at a **B.B.K.A.** Conversazione, and as reported on in the June number of THE BEE WORLD, is one of greater representation and co-ordination, and not a form of independence which past experience shows has been only creative of jealousies and strife. Local Associations certainly need to be developed and helped in their educational work, but there is a sad need also for federation in the fullest sense. When this is attained, the rate of our progress will not be jeopardised, and such an important question as that of legislation will never meet with personal oppositions or require so much pleading for.

We hope in our next issue to treat constructively various points relative to beneficial legislation which strike us as deserving serious consideration, and without which we sincerely believe that legislation will not be the boon which its unconditional supporters consider it to be.—Ed.]

Malignant Dysentery and Overwork.

By THOS. F. COBB.

In considering the scourge of the " Isle of Wight Disease " of the Honey Bee, the ordinary beekeeper is in a somewhat hopeless position, owing to his lack of technical knowledge, few of us being able to do more than play with a microscope, but it is quite probable the identification of the microbe actually responsible, is a matter of only secondary importance, and that the real root of the trouble is in allowing the bee to get into that condition which makes it possible for the microbe to thrive and prosper.

In human complaints it is thoroughly recognised that while the constitution of a person can be kept strong and vigorous, serious attacks from microbic diseases need not be feared.

The recent Influenza epidemic has not by any means been properly accounted for. Yet on one point practically everyone is agreed, that it was only made possible through the deteriorating effects of the world shortage of certain foods. Is it not feasible to suppose that previous to the advent of I.W.D. a similar weakening of the constitution of the bee had occurred ?

Feasible or not, many beekeepers have been reasoning along these lines, and reference to bee literature of the last few years will disclose a host of reasons put forward as possible explanations of why the bee was unable to stand before the approach of the disease.

Any alteration of our manner of keeping bees about this time has naturally been regarded with suspicion and the merits of frame hives versus skeps, wood versus straw, feeding with sugar, not using the wax producing organs, coddling, in-breeding, and others have all been discussed. But of all the modern alterations and changes that have occurred in the life of the bee, is there one to compare with the difference in the number of eggs which the modern queen lays and the number her great-great-grandmother used to lay in the pre-" I of W. "days ?

Let us consider how great this difference is. In the skep days, a queen was apparently not overtaxed in keeping full of eggs that much of a skep that was not full of honey. The first step was to transfer her to a frame hive of, say, ten standard frames, with a total cell capacity of two to three times that of the skep. But on the top of this, it must be remembered that during times of dearth, which are all too frequent in our Country, a queen left to herself would be taking a rest, or at least a partial rest, but modern beekeeping decreed that if no natural honey flow existed, an artificial one should be created by slow-feeding, so that a queen should **always** be under stimulation to do her best. Spreading the brood, even when resulting in chilled brood, was always certain in that it occasioned the queen an extra tax on her powers, and instead of the real honey flow **curtailing** the space available, we got it stored in the supers.

Is it an exaggeration to say the queen is now laying four times the amount she used to do ? But we are fairly generally using two brood chambers now, or larger frames, which brings the total up to eight times.

Now, if we consider the breeding of other creatures, we are familiar with, we find that nature sets a limit to their **capability** of reproduction, and also a limit beyond which it is not **safe** to go without harm resulting to parent or offspring.

The rabbit in a wild state is seasonal in its breeding ; but it has been domesticated to the point of breeding at any and every season, yet the limit of safety is well recognised. With poultry, wonderful strides have lately been made in developing a prolific strain; yet here also it is admitted, though they have gained in prolificacy, they have lost fertility.

There is no need to labour a point not likely to be disputed, but have we applied this knowledge gained to our breeding of bees ? It must be admitted we have not. On the contrary we have never known any **limit of safety,** all our efforts have been towards working a queen to the limit of **capability,** and having got her there, to keep her at it. But worse still was the method of choosing the most overworked queen in the apiary to be the mother of future queens, thus doing our best to perpetuate any harmful results.

Some months past, in the correspondence columns of the **B.B.J.,** there appeared a number of features more or less noticeable when studying the experiences of beekeepers with the disease. Everyone may not agree that all the points there mentioned **are** noticeable in " I.W.D. " experience, but reference to beekeepers' tales of woe bring them up with surprising frequency, and each one of them (mine were given) fits in with the theory that overwork is the trouble. One of the points mentioned, the best stocks going first, crops up again and again in the discussion.

The discussion in the **B.B.J.** showed that many consider the skep is more immune than the modern hive. Supposing this is so, what could explain it better than overwork ?

The necessity of re-queening is perhaps the strongest pointer to overwork as the danger. Normally, a queen would last for several years, but it has now become necessary to re-queen yearly. What is this but an admission that the queen has been worked out ? She is now **incapable** of laying the number of eggs required, and is it not reasonable to suppose that long before her **incapacity** was manifest, she had only been producing inefficient offspring, complete as to the number of legs and arms but lacking in vim and vitality ?

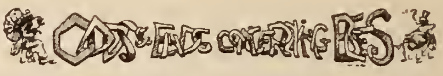
How is it that bees may be brought from Holland and Italy, or indeed from British breeders. placed in the midst of infection, and not succumb ? And after proving their contempt for the disease, go under like the rest next season ? Their partial immunity cannot be due to any fundamental difference from our bees; it seems far more likely a season of too intensive cultivation has reduced them to the level of the rest. Again, have we not found from experience that any cure for any complaint is made more certain by giving a young queen ? Surely the inference is obvious.

But the critic will be asking, if overwork is responsible, why is not America suffering to the same extent as ourselves ?

On first thoughts this appears a reasonable objection ; but on closer inspection, it is easily explained and then becomes further corroboration. To begin with, America adopted the Italian bee to a far greater extent than ourselves, which is naturally more prolific and therefore more difficult to overwork ; and further, America has never attempted to force the individual colony to anything like the extent we have. The methods so generally advised here would be utterly impossible with the huge apiaries of America, and the rate of increase in bees progresses more in acordance with the bees' own inclination.

The beekeeper with his feet on the mantelpiece will not be wasting his time if in recalling " I.W.D. " experiences, he will figure out whether or not overwork supplies a possible explanation. If on the contrary he recalls certain incidents that appear to contradict it, there are many who would be interested to hear of them, since no one is out to boost any particular theory, but only to determine the truth.

[This article by Mr. Cobb is intended as an exposition of **his own** views, as distinct from the various combinations of theories advanced by different writers under the general title of " overwork." Our previous as well as our future comments will show where we agree and where we differ from Mr. Cobb's point of view. Space alone prevents us from further discussing this subject at present.—Ed.]



By R. WHYTE.

PROGRESS IN BEEKEEPING.

It has been said by Dr. Miller, that more progress in Bee Culture has been made during the last 70 odd years than in the entire previous history of the world. In 1842 appeared the Dzierzon theory; in 1851 Langstroth gave us the first **serviceable** moveable combs; in 1857, Johann Mehring, comb foundation; in 1865, Hruschka the honey-extractor; Hannemann the queen-excluder (exact date unknown). These may be considered the major improvements. Amongst the minor improvements in bee management may be mentioned the smoker, sections, feeders, queen cages, etc. etc.

BEES AND COLD WEATHER.

During the last cold snap the question was put to me, " Will your bees not freeze to death in this cold weather ?" This brought to mind that Doolittle many years ago gave the results of his experiences in determining how much cold bees could stand before actually freezing to death. These results which he gave in **Gleanings** are interesting. When spoken of in connection with a full colony of bees it is quite fallacious to talk about bees freezing to death. Individual bees, or even a cluster of fifty to one hundred, when separated from the main cluster, often freeze to death, the individual bee always succumbing to the cold with a temperature lower than forty above zero, unless it warms up within 36 hours after the bee ceases to move; but a good colony, in a good hive, with plenty of stores at their command, never dies from cold in a sense that can in any way be interpreted that they froze to death. If we investigate this matter we shall find that, while it is possible to freeze nearly all animal life by exposure to a low temperature, the bees seem capable, with stores near at hand, to stand any amount of cold. The bees on the outside of the cluster may become somewhat stiffened with cold, but those within are nearly as brisk and lively as in summer.

Moses Quinby in his book **" The Mysteries of Beekeeping "** knew this to be so when he said that the bees inside the cluster, on a " zero morning," could fly as readily as in July, should the cluster be suddenly thrown apart. Elisha Gallup, a one time well-known writer on bees, speaking of a winter in upper Canada, says: " The thermometer for sixty days in succession was not above 10° below zero, and for eight of these days the mercury was frozen, yet my bees, in box hives, with a two inch hole at the top, and the bottom plastered up tight, came through in excellent condition." From experiments conducted with a self-registering thermometer during several winters, it was found that, with a temperature of 20° below zero in the outside air, a temperature of 45 to 46 degrees above is maintained within the hive, with the bulb of the thermometer touching the outside bees of the cluster, while an equal number of experiments with the thermometer placed in the centre of the cluster of bees gave a warmth of from 63° to 64° above zero, when it was from 10° to 25° below outside. To test the matter more thoroughly, a colony was taken one evening when the mercury was at ten below zero, the hive being suspended two feet above its bottom-board, all coverings being taken from the top of hive, so that they were the same as if hung in the open air, so far as bottom and top were concerned, and as the bees did not come out so as to touch the hive in any place, they were very nearly so at the sides. They were left thus all night, during which the mercury had gone as low as sixteen below zero, yet the next morning the bees were all right, although they had contracted till the cluster was little more than half as large as it was the night before. Had they been left thus till they had consumed all the stores inside the cluster, undoubtedly they would have succumbed to the cold, but in that event it would not have been a case of freezing to death, but of starving.

HONEY AND RADIO-ACTIVITY.

Some time ago, Mr. Alin Caillas, a prominent authority in France, on the subject of honey analysis, discovered that honey shows radio-activity. Some kinds of honey show the presence of radium more than others, notably so, honey from the department of Tarn and from Tunis. In **L'Apiculture** he indicated by an illustration, its effect on the photographic plate which showed a white striation not unlike the Milky Way on the sky. He says this is extraordinary, as honey is a vegetable production, and radium has been supposed to be purely mineral in its origin. He thinks this may account in part for the extraordinary value of honey as a food and medicine. He attributes high values to various constituents of honey usually present in small amounts, but enough for the purpose. In this list are included, potassium, formic acid, chlorides, azotates, and carbonates.

GRECIAN BEEKEEPING.

I have read Mr. H. Campbell's "annotations" and rather like the idea of being critically read and commented on. What Mr. Campbell says as to present-day practice in Greece is rather surprising. The late Mr. Frank Benton read a paper before a Convention of Beekeepers in the United States on the various races of bees he had come across in his travels. "In Greece," he says, "I found quite a vicious bee, large and dark, possibly a mixture of Eastern and Western bees. A sort of round basket, fitted out with top bars, was used as a hive. It may have been in use for a thousand years. The people there have a way of keeping their strained honey in goat-skins, hair side in, of course." This "round basket, fitted out with top bars," is exactly as Wheler mentions in his book.

METAL COMB AND METAL FOUNDATION.

I have critically examined **the Macdonald Aluminium Comb** and I am amazed at the ingenuity displayed in its production. Another season I would like to test the actual working of these. The fact that the bases of the cells are not completely closed in, and the sides of the comb not wrought out to the wood, is certainly the main objection that can be urged against it. Next season, I may have an opportunity to put a set or two in actual practice. Meanwhile, **the aluminium foundation** appeals to me more forcibly as being the midrib of a perfectly rigid comb which can be bred in right out to the sides. Aluminium foundation for extracting combs will obviate all danger of the combs breaking, and will allow of a much wider meshing being used in the extractor. **Altogether, I would pin my faith on the metal foundation as against the comb.**

Many years ago, I experimented with wood veneer dipped in wax, also with paper dipped in wax, as reported on in the October number of THE BEE WORLD. Both these were taken to by the bees; but, later on, I found the bees bit holes in the paper and the veneer bulged and buckled. I abandoned both as a composite substitute for the wired pure wax article. Lately, I experimented with some sheets of aluminium 26 w.g. thick. I set my foundation mill so that the rollers just met with the metal between. I dipped the aluminium in molten wax several times and then painted the wax on to a sufficient thickness to take the complete impress of the cells; alas! I found the amount of wax necessary for this equal to a sheet of heavy brood foundation on each side of the metal. These defects of solid supports for wax foundation require to be emphasised to the Craft; hence my excuse—as one who has thoroughly tested them—for this repetition of my warning. I also found the wax somewhat prone to blister up in the going through the mill.

I am looking forward to testing several sets next season of this invention of our worthy Editor, as from my past experience I am quite sure this metal foundation has come to stay.

Bulbous Flowers for Bees.

By A. F. HARWOOD.

During the war, the prohibition of importation of luxury articles struck at the trade in Dutch flowering bulbs, with the result that many previously cheap and familiar varieties became either unprocurable, or only obtainable at prices beyond the reach of any save the "new rich."

Even now, high freights and the traditional commercial 'cuteness of the Dutch growers are keeping prices far above pre-war levels, with little prospect of an early or considerable drop.*

Nevertheless, to the bee-gardener who delights in providing for his honey gatherers a setting worthy of himself and them, it is impossible to neglect the provision of early beauty and forage in the form of bulb flowers.

Earliest of all, especially when planted at the foot of a south facing wall, comes the winter aconite **(erianthes hyemalis)**, the yellow blooms of which I have had out at the same time as those of the Christmas Rose **(helleborus niger)**. It frequently occurs that we have a few really fine days just after Christmas and I have had clumps of aconite freely visited during these warm, sunny spells.

The crocus is, perhaps, the most valuable of the early-flowering bulbs for bees. It yields pollen very freely at a time when this is most needed and may even be used as a vehicle for the supply of artificial pollen in the form of pea flour, which will be readily taken by the bees if sprinkled into the flowers. Care should be taken to protect crocuses from sparrows which attack them vigorously.

Single snowdrops **(galanthus nivalis)** are also attractive to bees and make a charming effect either in rock gardens or naturalised in lawns with crocus or alone.

Chionodoxa **(Glory of the Snow)** is a companion subject of which the variety **c. luciliae** has brilliant blue flowers with a white centre, **c. sardensis** being a richer, darker shade and **c. gigantea** a larger bloom of lavender hue.

The Grape Hyacinth **(muscari)** is a very early-flowering subject. **M. azureum** comes first of the shade of blue associated with the East Anglian 'Varsity, while **m. botryoides** is richer and, to my mind, more exquisitely pure in colouring. Both are of simple cultivation as are the squills **(s. sibirica)**, also a bright blue, being an old favourite for border or rock-work.

The alliums are well worth a space in any garden, being specially suitable for planting in clumps in mixed borders. They vary in height from the 8 inches of **a. ostrwskianum** to the 2 feet of **a. azureum**. All are quite hardy, the first-named has large umbels of magenta flowers, freely produced; **a. moly luteum**, 1 foot in height, is bright yellow and a great favourite with my bees.

Perhaps the most valuable as bee forage is the fritillaria group, **f. imperialis** being a very handsome border plant of easy culture, the two varieties flowering respectively yellow and coppery red with a black and white centre. The nectar secretion of the Crown Imperial is exceedingly free; **f. meleagris**, the checker or snakes-head fritillary, makes a charming companion to its taller relative. Curiously marked, hence its name. its slightly pendant flowers are arresting in their distinctness of colour and design.

Hyacinths should not be forgotten either, as bees work them freely in favourable weather.

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*Since the above was written, many dealers have announced reductions of from 25 % to 50 % in catalogue prices of bulbs.

The Press Mirror.

Gleanings in Bee Culture.

HONEY FROM PARSNIPS AND CELERY.

By E. R. Root.

Outside of a few small localities in the United States, honey in carload lots from ordinary garden plants would seem almost like a myth ; and I confess when I heard about the large quantities of celery and parsnip honey that were secured in the Sacramento Valley, I myself thought there must be some mistake, and that the bees were getting honey from something else.

Just before leaving California, toward the latter part of June, I had the pleasure of taking a trip with H. Gear, of Walnut Grove, California, who has some 500 colonies scattered in lots of 150 in a place. Together we travelled through a portion of the Sacramento River Valley, or that part of it that runs from San Francisco to Sacramento. For miles and miles up and down the river we saw some of the finest garden country in the world. This old river, like many other streams running through soft soil, has a fashion of overflowing its banks and making new channels ; so we see on each side high embankments, the purpose of which is to protect the truck farming during high water in the spring. There are all kinds of garden truck grown there, and many of the plants are raised for seed—especially celery and parsnip ; and right here is where my story really begins. Celery and parsnip honey is stored in skyscraper hives...... While the bees get a great deal of benefit from the early fruit bloom, it is equally true that the fruit-growers themselves are benefited ten times as much in more and better fruit. But it is not this fruit bloom that yields the main crop. As is usually the case, the fruit bloom gives the bees a good boost for the heavier flows that come later—in this case from the garden plants when they are allowed to go to seed.

At the time of my visit at Mr. Gear's apiary, I saw many of the hives stacked five or six high, and on opening them, we found them completely jammed full of honey ; in fact the bees should have had room long before, but Mr. Gear had had difficulty in getting help, and the bees had got ahead of him. The colonies were so crowded that the space between the cover and the tops of the frames were built full of burr-combs ...... All this honey was from celery and parsnip—at least that is what Mr. Gear told me. While I did not tell him so, I wanted the proof. We went down the river a little way to see some of the big celery and parsnip fields that were in bloom and going to seed. On our arrival at the field, it was very easy to be seen that there was honey in the blossoms. In the sunlight the little drops of nectar gleamed like myriads of little diamonds—no question about it. The nectar was there in great abundance, both on the celery and parsnip blossoms, and the bees, fully conscious of the fact, were right there on the job. I tasted some of the raw nectar from the celery. Sure enough, there was quite a strong suggestion of celery flavour.

There are other plants in that garden truck land that yield honey likewise ; but the celery and parsnip were the most important.

Garden-truck honey is not of the best—it is a mixture, a little of everything, but mostly celery and parsnip. The last named does not furnish as good honey as the celery.

The American Bee Journal.

THE NETHERLAND BEE.

[From an article on "Beekeeping in the Netherlands" by P. J. Frenay, originally contributed to **L'Apiculteur.**]

On the whole, the Netherland bee is a common bee slightly larger than the average. Her main qualities are rusticity and activity of the workers and prolificness and precocity of the queens. They usually build straight regular comb. The cells, not being filled too full, the honey does not touch the cappings, which give the sealed comb a whitish tint and a very pleasing appearance, even when it contains dark honey.

Their introduction in an apiary cannot fail to be advantageous. Their value is the greater because no contagious disease has prevailed in Holland. Foulbrood, especially, is unknown there, in the native apiaries. When, at different times, German beekeepers brought there colonies suffering from the disease, the General Government, which effectually protects beekeeping, took measures so strenuous (destruction by fire of every contaminated apiary, bees, tools, clothing and everything that might be suspected of contamination) that the disease never spread. Since 1914, all trade with Germany having ceased, not a single case has been pointed out.

The Domestic Beekeeper.

OUTDOOR WINTERING.

By Jay Smith.

The problem of wintering our bees has been discussed for many years ; but still it is doubtful if we fully realise the importance of bringing our bees through the winter in the very best of conditions. If a colony comes through the winter alive, too many are satisfied and believe that because the colony is alive at all, that it "lived through," living through is all that could be expected.

In reality many are losing ALL of their colonies, for spring finds them with more NUCLEI, not COLONIES. When the honey flow comes on in May or June, the beekeeper secures a small crop, if any at all, for the bees used this honey crop to build up on and become strong only after the honey flow is over, only to go through this same dwindling process the next winter.

For those who winter out of doors, there is nothing in my belief which quite equals the packing cases advocated by the Department of Agriculture......It is quite generally believed that these cases are good for the Northern States only, and are not necessary as far South as the latitude of Chicago. I am located in Southern Indiana, only forty miles north of the Ohio river, and know it certainly pays big interest on the money invested to use these cases. In fact, I believe at the present price of honey, these cases pay for themselves each winter in the honey saved and probably pay again in the number of bees carried over.

The Canadian Horticulturist and Beekeeper.

THE HONEY TRADE OF THE FUTURE.

By W. A. Chrysler.

While on a visit to one of the largest and also one of the most reliable firms in the United States, who bottle and sell enormous quantities of honey throughout the Country, I was somewhat surprised to learn that they blend practically all the different flavours and colours of honeys produced in that Country into one mixture. This would indicate that there is a change taking place in the marketing of honey. From the stand that many of our best honey producers have taken in the past, I can imagine them lifting their hands in horror at the thought of spoiling the excellent table honeys of distinct flavours and producing an inferior grade and inflicting it on the consuming public.

If the beekeepers of Ontario were to mix their clover, basswood, buckwheat, aster, goldenrod and all other varieties together, it would give them an unenviable reputation. Are the honey producers of Canada going to see to the marketing of their product or are we going to stand by and see it commercialised ? Many beekeepers say that they are quite indifferent as to what the dealer does with it so long as they can sell it without any trouble. The consuming public is a secondary consideration with them.

One of the greatest assets the Canadian honey producers have, and one of the greatest public safeguards, is the lithographed pails, when the name and address of the producer is printed on each. A honey producer should put up his honey intended for table use in containers with his name and address on them, which would insure that it will not be changed.

There is, however, another side to this question, and that is, what is going to be done with the many varieties of honey offered to the large buyers and distributors? From their point of view, it would be difficult to keep the different grades separate. Where a firm is doing a large business with many travellers on the road continually and can sell immense quantities of any product, even though it be of inferior quality when better goods can be secured only periodically. What think you, Mr. Beekeeper?

Are we interested enough to do our best to see that the consumer gets what he wants, not just what he is forced to buy?

The British Bee Journal.

THE OBSERVANT APIARIST.

By P. Lythgoe.

An observant mind is a great desideratum. It is by noticing the behaviour of the bees that a knowledge of their requirements is gained. Notice the movements of a queenless stock in comparison with one having a queen. Their movements outside the hive are a certain indication of the condition within. Open a hive, and if the bees are going to oppose you, an observant eye will foresee their intentions at a glance.

How many times is the question asked: "When does the honey flow begin?" An observant beekeeper will know at once. A certain amount of business tact will be required in finding a market for the produce, and here the careful beekeeper will gain the ascendency; his honey will be neatly packed, and graded as to quality. The careless will have theirs with propolis on the sections, honey leaking from the bottles, and a look of messiness prevading the whole—a bad market being the result. Finally, if a beekeeper wishes to be successful, he should read up some good modern bee book; theory and practice go together, of this I am assured.

Bee Craft.

DRONE CONTROL.

A series of interesting experiments might be carried out by rearing black queens and giving to each mating hive a frame of drones from the queen mother colony as well as a frame of pure Italian drones. We feel confident that under these conditions, Nature's safeguards against inbreeding would be clearly demonstrated, by the resultant workers being crosses, in a proportion distinctly higher than 50 per cent.

In our opinion such experiments will not prove what is expected from them, since the factor of odour which is influential in familiarity between bees, will not be excluded. It is a different case with a nucleus of "black" bees (possessing a sufficiency of drones) to which access of Italian drones in the same apiary is prevented, and provided the latter are not in abundance. With due allowance to the possibility of chance, it would be fair then to make conclusions.—Ed.]

The Western Honey Bee.

REMOVAL OF IMMATURE BEES.

This question is put to the editor of our American contemporary: "What is the cause of immature bees being carried out of the hive, some in the larval state and some in a more advanced state of maturity? I have noted that some appear to have life when brought out. There is no disease." The following answer is given: "This is a hard one, but we suggest that the bees were out of food, and ate the jelly sealed up with the young bees, to keep from starving. Then knowing the young were doomed to die, they dragged them out of the hive. Bees have been known to do this, though infrequently." This explanation would be feasible for at least some cases, were it not that following a starvation swarm one does not meet with capped brood having been uncapped, also were it not that the trouble does occur in spite of the presence of food. It is generally traceable to a highly prolific queen, early in the season, and in the absence of a sufficiency of covering bees (i.e., due to shortage of nursing bees, apart from smallness of the general population in proportion to the breeding activity).

The Beekeepers' Gazette.

"NOSEMA APIS"

By A. Spyglass.

Whether we call it this, or "Nosema Disease," or "Nosemosis" or "Microsporidiosis"......it appears to be certain that "I.W." disease is on the decline in England. The fittest have survived. There is not now the quantity of weak material that there was in recent years for the disease to work upon. The importers of Dutch bees may claim that it is they who have stemmed the tide, but I incline to believe that I.W. has run its certain course, and will disappear in the ordinary way, like the diseases of cholera, influenza, etc., which scavenge among men.

The editor of the **Gazette** makes the following observation on the above remarks: "You will probably agree that with the lessening of the number of stocks there must be a lessening of the number of cases of disease. When a man has no longer any bees, he has no longer any I.W. It was anticipated that I.W. would run its course."

We may add, however, that there is evidence of **present** abatement of I.W.D. in spite of active increase in breeding. This is no guarantee, however, against a future epidemic.

The Beekeepers' Record.

NOVEMBER THOUGHTS.

By J. Smallwood.

Warned by the chilly nights and the failing food, the rats and the mice are returning to winter quarters in the barns and out-buildings. Beekeepers, watch that the latter do not get into your hives, stretch a stiff wire across the entrance. And now we may notice the immigration of the birds which winter with us. Field-fares, the larger and smaller kinds, I have watched arrive in flocks of thousands. And, occasionally, the heavy wing-beat of the wild swans and geese, will pass the news that in climes further north the lakes and rivers are rapidly freezing. What mariner's compass have they to guide them in their long flight? Year after year, and century after century, have they accomplished unerringly, unfalteringly, their journey Kingdoms may crumble, what reek they. The maps be altered. They know naught of it. A continent is as one field to them. Until the creation falls back into its original chaos, this same coming and going will still continue.

Our bees are clustering, and the hives are silent, except when a bright, warm day tempts them to change position. Leave them severely alone; they will much thank you to do so, except when you renew the candy, which should always be on the feed-hole. There are no evidences to show if it is only sleep they fall into, or if they lose complete consciousness, as do some of the other insects. But should an accident occasion you to see them during the winter, you will find them drowsy as someone who has been disturbed from deep slumber. They hasten to cling together, are cross and peevish. They fly very little, but crawl over your hands, up your sleeves, and creep under your coat to come out when you are by the fireside.

[Mr. Smallwood stands for the orthodox winter management and views.—Ed.]

The New Zealand Beekeepers' Journal.

DO QUEENS MATE IN THE HIVE?

The only occurrence in the Editor's experience that now looks as if a queen here and there has the inclination to mate within the hive was that a young queen was hatched, and to all appearances was a perfect queen—certainly her wings were perfect and her body a beautiful shape; but although the weather (in January) was just what one wants when young queens are flying, this particular queen did not get mated, and after the Editor waiting just over four weeks for a happy event to take place, she was unmercifully killed. Is it possible that she was waiting a drone of the "Barkis is willin'" type within the hive? In any case, the subject is a very interesting one, and as there are such tremendous possibilities for the good of the industry if mating within the hive were to become a natural function, we hope our friends will keep a good watch out for any occurrence that would give reason for believing that they had a queen or queens with this tendency and let us know.

The California Honey Bowl.

GOOD REPORT FOR CAUCASIAN & CARNIOLAN BEES.

By W. W. Lantis.

The honey crop of this section is very short and of poor quality. There has been more disease among bees than usual, too.

Am receiving $6.00 for 24-pound case of honey and could get more if I asked it.

Extracted honey is selling for 25 cents per lb.

The largest crops of comb honey are from the beekeepers that had the Caucasian and Carniolan bees, while the ones having Italians and hybrids are reporting small crops.

The Beekeepers' Item.

THE STANDARD AMERICAN HIVE.

By E. G. Le Strourgeon.

The movement to get away from the type of hive that most of us use seems to be gaining headway. The opinion is very well founded with most authorities in substantial agreement, that the Langstroth hive was developed as a comb (section) honey producer and is not the most efficient medium for extracted honey production. Of course, ... there are a few dissenters, but they are in a surprising minority.

I am glad that we started this discussion. Many constructive ideas are coming to the front because of it. The necessity is apparent, that if any solution is made of the problem it must be one that takes into account the need for using as far as possible the present Langstroth equipment. If any relief comes, and if any improved type of hive is offered, its chance for universal adoption will depend upon this feature more than any other. In proposing the new Jumbo, or modified Dadant Hive, as it is called, the Editor of the **"American Bee Journal"** takes this fact into consideration.

Proceedings of Associations and Clubs.

THE B.B.K.A. AUTUMN CONVERSAZIONE.

The first post-war Autumn Conversazione held by the **B.B.K.A.** proved a most successful one, and was enthusiastically attended by many beekeepers from different parts of the Country. Earlier notes bearing on it have already appeared in THE BEE WORLD.

Amongst the subjects discussed was "The Difficulties of Queen Rearing" introduced by Mr. G. Thomas. The lecturer suggested that "to keep swarm cells means propagating a strain of bees with a tendency to swarm." He was further of the opinion that "when queens are reared under the swarming impulse, the bees sometimes cap the larvae at ages of the larvae which vary a little, and he knew for a fact that they sometimes built queen cells around larvae which were older than those which he chose for grafting purposes." We may remark that there is neither practical nor scientific evidence to substantiate his first contention; and as for the second, it is not a rare exception to meet with undesirable natural queen breeding under any impulse. But the exception does not much count. Mr. Thomas has daringly succeeded, however, in impressing on his audience the fact that progressive queen rearing does not mean entirely trusting to Nature. He also suggested that "the longevity of the queen is transmitted to the worker bee, and that a strain which is capable of producing a long-lived queen, will produce a worker similar in that respect, a very vital point in wintering qualities, also in a honey flow of long duration." As regards this latter point, however, he added that it is generally the life of the wing which decides the life of the bee. "To find if the progeny of a queen were long-lived, a record must be kept. For instance, if a colony of bees covered, say, twenty combs when packed down for winter, and in the Spring only covered eight, that queen would not be bred from." The arguments advanced have some weight, though easily challenged. The longevity of different strains of bees are bound to vary, within narrow limits. The practical bearing of this is no greater than the matter of long and short tongues, the narrow limitations of which are sufficiently recognised. But of all the guiding suggestions that may be advanced as to the determination of longevity, that put forward by Mr. Thomas cannot be described as accurate, and we fear it will only lead to a condemnation of the innocent, since the adverse factors which lead to the winter depletion of a stock far outweigh the factor of an inherited longevity. Our remarks do not mean a lack of appreciation on our part of originality of views and methods, but rather the reverse.

SOCIAL BEE EVENINGS.

The Glasgow and District Beekeepers' Association opened its Winter Session with a Social Evening on the 21st of last month, 79 members and friends being present.

A varied musical programme was gone through, and after refreshments were served, the President, Mr. R. Whyte and the Vice-President, Mr. Alec Steven, addressed the gathering on the subject of beekeeping.

A hearty vote of thanks was accorded the President for presiding.

A series of lectures have been arranged for the winter, to be given by the following gentlemen:—

Rev. John Beveridge, B.D.
Mr. Alec Steven, L.R.A.M.
Mr. W. G. Avery,
Mr. John Anderson, M.A., B.Sc.

The secretary, Mr. P. Bebbington, of 65, Robertson Street, Glasgow, will be pleased to have the names of ladies and gentlemen desirous of joining the Association.

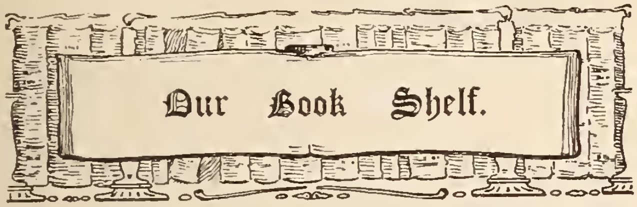
WINTER LECTURES AND DEMONSTRATIONS.

Several Beekeepers' Associations in Great Britain and Ireland have already started winter courses of lectures on beekeeping for the benefit of their members and others who may wish to enforce the ranks of organised beekeepers. Amongst the interesting lectures that have already been given is that by the Rev. A. Thornley, M.A., F.L.S., F.Z.S., etc., under the auspices of the **Notts. Beekeepers' Association,** on the subject of "The Wild Relations of Hive Bees." The **Carmarthenshire Beekeepers' Association** have arranged a good syllabus which started last month with a lecture by Mr. R. Lloyd Roberts on "Foul Brood Amongst Bees" and "Races and Varieties of Domesticated Bees" by Mr. J. Winterbottom delivered this month. **The Sheffield and District Beekeepers' Association** have instituted a course of monthly lectures as already in practice by the **Kent Beekeepers' Association** (the lectures of which are reported regularly in **Bee Craft**). Mr. Charles M. Hansell, the well-known beekeeper and one of the Vice-presidents of the former Association, gave an interesting address to a large number of members and friends and showed thirty slides illustrating the tongue, sting, legs, etc., of the bees. "After explaining the lantern slides, the lecturer drew attention to the olfactory organs of the bee, which hitherto have been supposed, but never decided, to be located in the antennae. In 1860, Dr. J. B. Hicks discovered numerous pores and it has devolved upon Dr. McIndoo, of the Washington Bureau of Entomology, to work assiduously upon these pores, and he has proved them to be the organs of smell. There are about three thousand of these pores and two-thirds are located on the bases of the legs and wings, whilst the remaining are distributed over the leg joints, sting, and mouth parts. Another item of interest was the voices of the bees. Each of the twenty spiracles, or breathing organs, produced sound, with a range of one and a half octaves, whilst the wings gave the sibilant notes. A perfect chorus, but owing to other sounds, the notes of finer spiracles were not always heard. These voice notes are most probably the means by which the bees communicate with each other."

Of historical and educational interest is the exhibition given last month under the auspices of the **Staffordshire Beekeepers' Association** by Mr. Price, the noted bee expert for the Staffordshire County Council, of various bee appliances, both historical and modern, such as different types of frames and spacers, "Neighbour's Improved Cottager Hive," the "Little Wonder Honey Extractor," etc.

The Secretary of **The Apis Club** exhibited at the offices of the **B.B.K.A.** on the 7th of November specimens of metal foundation, and a small nucleus in an observatory hive of bees established on a comb built on metal foundation. The demonstration created much interest and was reported in the **B.B.J.** for November 13th.

* * *


Our Book Shelf.

BEES SHOWN TO THE CHILDREN [†]

By ELLISON HAWKS.

From the sole ambition of inspiring children to love and reverence Nature, through the study of one of its most wonderful creations, The Honey Bee, Mr. Ellison Hawks has achieved a greater ambition by gaining the interest of every reader of his charming work. Annie and Keatie no doubt have valued his affectionate dedication, have read again and again his pleasant writings, and may be safely counted upon as sisters in the Fraternity; but this modern Lordswood has recruited many admirers, of different ages and tastes, to the Craft of beekeeping, and to the Championship of the Bee.

His captivating gospel is one of the finest literary instruments for the service of the propagandist. It is delightful to both parents and children, and may be passed with confidence and pride from hand to hand. It will never be described as " dry " even by those who " hate " bees. They will not resist the temptation to examine it, and their " hate " is found then to abate.

In conformity with popular modern teaching, this little book is further enriched by originality of style, by beautiful illustrations, both coloured and otherwise, and by a presentation of much valuable information in an attractive and very simple form.

The work, however, is conspicuous by its absence from the list of literature, usually presented for selection to the beekeeper, for general reading. No doubt, its modest title has been deceptive. Yet it is one of the manuals which should be read first by the prospective beekeeper. It affords in addition a recreation ground for the mind of the average apiarist, and of the expert and veteran.

" Bees Shown To The Children " merits a greater exposition to the whole Craft.

* * *

MATING EXPERIMENTS.

Mr. F. W. L. Sladen, F.E.S., the celebrated queen breeder, and apiarist of the Dominion Department of Agriculture on Duck Island, at the eastern end of Lake Ontario, has recently conducted some interesting experiments on mating, the most striking of which is one which shows that queens mated by hand picked drones, not more than about two weeks old, became drone breeders, producing from less than one per cent. to about fifty per cent. of workers. Duck Island is eight miles from the nearest land and no bees are kept there. The experiment clearly emphasises that, for the purpose of controlled mating, the apiarist should have his selected drones at a more advanced stage of development than his queens.

MALT SUGAR SYRUP AS WINTER FOOD.

The United States Department of Agriculture draws attention to the production on a commercial scale of malt sugar syrup. It is described as looking very much like maple syrup and can be used for everything that cane sugar is used for. While its use on the table may not be as convenient as sugar, it is said to be a most excellent substitute for table use when sugar is not to be had, as it not only provides sweetness but is equal to sugar in food value.

Malt sugar syrup has been found acceptable to bees as a food on which they thrive. Should it be found rich in vitamines and devoid of irritants and indigestible impurities, it may well serve as a better winter food for bees than pure cane sugar syrup.

EPSOM SALTS FOR DYSENTERY.

Dr. Sturtevant, of the Bee Culture Laboratory of Washington, also other American researchers, have been experimenting with Epsom salts mixed with honey, in the medicinal treatment of dysentery. We cannot conceive any good results. In this Country, similar experiments have been conducted before but without any benefit. Such an experimental work is not based on sufficient appreciation of the causes of dysentery, nor does it take into consideration the exhaustive effect of a purgative, and the unfavourable circumstances during which dysentery occurs. These mean that if bees are purged whilst within the hive, a large number of members of the cluster will suffer, whilst if they feel compelled to leave the hive under adverse conditions, the mortality would be appalling.

A WASHINGTON EPIDEMIC.

A severe Washington epidemic of fatalities amongst bees is reported. Poisonous fruit tree sprays are suspected as the cause of the calamity. Circumstances however suggest an epidemic of malignant dysentery.

THE WEST OF SCOTLAND AGRICULTURAL COLLEGE.

The West of Scotland Agricultural College at Kilmarnock already possess an apiary of 300 colonies of bees kept on the most up-to-date lines for experimental and educational purposes. Its apicultural department is one of the leading institutions of its kind in the United Kingdom, and trains on an average 60 students each year in the science and practice of beekeepering. Its most successful development speaks high for the organising ability of Mr. Tinsley, who planned the striking Bee Show by the College at the British Science and Key Industries Exhibition of Glasgow.

GENETIC RESEARCH.

The organisers of the " Thoroughwork Apiaries " of Kihikihi, New Zealand, seem to agree with us that there is still an open field for much genetic research on bees. They are announcing in the **New Zealand Beekeepers' Journal** their need of queens of the following races of Hive Bees: Cyprian, Punic, Caucasian, Carniolan and Egyptian (Apis Fasciata); also Apis Dorseta, Apis Florea, Apis Indica and Apis Melipone. They add: " These Bees **must be pure.** Expense is not much object, as they are required for laboratory experiments in the direction of Genetic Research." We have been ourselves trying to secure as many varieties of hive bees for experimental purposes, but unfortunately not with much success, although we are indebted to the generous assistance of Messrs. H. Campbell, F. M. Claridge, A. F. Harwood, and H. Helbawy.

INTENSIVE BREEDING.

" Your article on **intensive breeding** reminds me of a small ' goget ' I made some time back for the same purpose, but which could be used in a single brood chamber early in the season. It consisted simply of a perforated zinc box, 14″ × 8¼″ × 4½″ with 17″ slats along the top edges, so that it could drop into position like a wide frame. The advantage of this, as I saw it, was that the bees could pass under and around this box to each end of the chamber. The frames inside don't really need the side space. The ¼″ space below the frames allowed the bees to reach the escape soldered to the bottom centre, and covered above with a square inch of excluder to prevent drones getting jammed in the escape. This was as simple an affair as one could desire and proved quite efficient. It was cut out of one piece of zinc and soldered up all within an hour. I expect, though, a brood-hatching chamber proper would be preferable later in the season. I must experiment with one next year."—S. Polhill, Monkwood, Chingford.

[†] T. C. & E. C. Jack, London & Edinburgh. 3s. 6d.

IMPORTATION OF FOREIGN QUEENS.

" I am ordering some **Carniolan queens** with a view to getting a strain that shall equal and even surpass the old **English Blacks** for comb honey. I am also importing some **Spanish queens** for general trial and test. Now these are Southern races, and it seems to me that it might be possible and desirable to obtain through the courtesy of the Rev. Beveridge some **Scandinavian queens** for use in the more Northerly and exposed districts of the British Isles. They should be A1 for wintering and withstanding climatic rigours generally."—A. F. Harwood, 14, Windermere Road, South Ealing.

REMOVAL OF QUEEN CELLS FROM METAL COMBS.

Mr. S. A. Ratliff, of Los Angeles, California, U.S.A., kindly informs us : " If you will give a full set of ten metal combs to a queenless colony, you will find that the bees will float the egg from the bottom of the cell out to the end of the cell wall and start the bottom of their queen cell on the end of the cell wall. In other words, the queen cell does not extend into the metal cell, but is constructed on the end of the cell, which makes the removal of queen cells exceedingly easy without damage whatsoever to the metal comb." We may remark that we are not concerned with this method of queen-rearing which is behind the advance of the time. Queenless bees are capable of committing blunders and yet are capable also of performing wonderful things for **ensuring** the raising of a queen. We have not conducted such an experiment as suggested by Mr. Ratliff and we shall not conduct it except for study, since it will never occur to us to raise queens under the impulse of queenlessness. On the other hand, under the swarming impulse, we have no hesitation in asserting that the metal cell forms a narrow base for the queen cell which is enlarged and prolonged from the opening of the former. We have verified this repeatedly, and we presume a dozen specimens or so provide sufficient guidance for answering a question of this type, although we admit the reactions of bees may vary within limits under different circumstances.

We quite realise that the developing queen larva ultimately moves **by herself** towards the apex of the cell ; nevertheless, one cannot remove such a queen cell without injury to its occupant, or at best, with a gaping base that cannot be conveniently sealed. The safety of the queen would then be a matter of chance which we do not count. In this connection, we may remark that we have not been gratified by the results of incubating queen cells that are not sealed at the base, presumably because of disturbing the humidity of the "cell atmosphere." It may be observed that it is better under the circumstances to wait till the cell is fully ripe before removing it for a short-lived incubation, since this would reduce the risks of injury to a minimum. Our answer is that the value of artificial queen cell incubation dates immediately after capping of the cell, otherwise one might as well leave the cell on the comb and protect it with a suitable cage. Further, some people rightly prefer the early removal of good queen cells, naturally built, for distribution amongst queenless nuclei, and we fear they will not be gratified by queen cells removed from the MacDonald comb. We sincerely hope we may be mistaken. But in any case, we do not see that this depreciates the value of the MacDonald comb, taking into consideration the many ways of raising and managing queen cells.

SINGLE-WALLED V. DOUBLE-WALLED HIVES.

Mr. Manley writes : " In my opinion single-walled hives are as warm as double-walled ones unless the latter are packed. A friend wrote to me to-day and said that you had some time experimented by placing water in vessels between the outer and inner walls of a W.B.C. hive and it froze. I told him that it would have frozen just the same in the brood chamber (not touching the cluster). As to an insulating hive, I have never been able to see how you can insulate a hive with an open door !" With these remarks we cordially agree. The practical lesson to be learnt from this is the advisability of maintaining a favourable minimum hive temperature by whatever feasible means, such as by indirect artificial heating, preferably in association with indoor wintering, or crudely by ordinary methods of insulation. The name of a hive, needless to say, is generally derived from its dominant feature. A study of the hive entrance in winter shows that it is to the advantage of bees taking cleansing flights to keep the hive entrance as widely open as practicable. But as this would be productive of a draught, and to some extent would diminish the value of insulation by the other parts of the hive, an entrance shade or a hinged entrance shutter, provided with bee holes, would become imperative.

FOUL BROOD AND " MEDICATION."

Just because it does not suit the convenience of the large apiarist to employ antiseptic management as one of the instruments in fighting foul brood, the practice has to be set aside with the wave of the hand. His need which has led to the creation and the development of the " power " extractor might also lead to the employment of a " power " sprayer for emergencies or otherwise. There is, however, this difference between the two cases. In the former case there is money coming in, whereas in the latter there is a little money going out, and its saving is supposed to be economy. Unless a germicide is harmful by being a poison or an irritant we can hardly imagine that it would be injurious to the bees to give it internally, and especially in obscure infections. When one recommends a standardised organic preparation derived from the oil of garlic for employment as being the most suitable antiseptic for internal administration to the bees, our learned readers should study the matter further before shaking their heads. An excellent exposition of the therapeutic value of garlic in one of the obstinate infections will be found in Dr. Minchin's recent work on tuberculosis (†).

There is now fortunately more than one standardised antiseptic preparation, derived from the oil of garlic, on the market.

REASONABLE INSPECTION.

An able correspondent writes : " Neighbours are seldom suspicious of one another, but only of the stranger from a distance. Now, suppose certificates are issued to persons that desire them—to the effect that their hives are all well and properly kept. And suppose the hives of certificate-holders are liable to inspection without notice and that, if they are then found badly kept, the holder will be fined £100 and go to gaol for three months (no lesser punishment being allowed). If I am a holder and suspect that my neighbour, Mr. Smith, has a hive infected with foul brood, he will scarcely resent me asking him to put things right ; for he will know that I am running a great risk and therefore have a right to be heard. Besides, he will not resent a request from a neighbour ; and naturally I should use all means of friendly persuasion, since it is always disagreeable to quarrel with a neighbour. But if he absolutely declines to abate the nuisance, then I, as a certificate holder, can call in an expert (a stranger), who, if he finds my claim justified, is bound by law to take possession of Mr. Smith's hive and bees, which, *ipso facto*, become the property of the State (and would usually be destroyed without any compensation). If my complaint is not justified, I shall have to pay £10 or £20 as the expense of getting the expert over. No one but a certificate-holder (living within 5 miles of the offending hive) shall have the right to call in the expert ; and no expert shall have any right whatsoever to examine a hive against the owner's wishes (except a certificate-holder's hive) unless he is called upon to do so by a certificate-holder. But of course, a certificate-holder can, at any time, resign his certificate, e.g., if he were seized with a severe illness. But unless he has so resigned it, he is liable to the penalties involved in the holding of it. I believe such a law would work smoothly. Mr. Smith would recognise that my risk gives me a title to be heard ; and I do not think it would be necessary to call in an expert once in a blue moon."

THE " IMMUNITY " OF " BLACKS " TO F. B.

It is the considered opinion of some of our leaders that whilst the Italian Bee appears to be immune to malignant dysentery, the " Black " Bee in her turn appears to be immune to Foul Brood. The more we examine this question, the more forcibly we are impressed that it is again a case of selective breeding which should not be

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(†) **The Treatment, Prevention, and Cure of Tuberculosis with Oleum Alii** by William C. Minchin, M.D. (Univ. Dublin). Bailliere, Tindal & Cox, 5s.

bestowed only on one variety of **Apis Mellifica.** the species with which most countries are concerned. The Fasciata and other species do not seem to be much troubled with Foul Brood nor with I.W.D., but this is not necessarily suggestive of immunity in the absence of an appreciable international trade in bees with their native lands.

JAPANESE BEES—SAMPLE 2d.!

"JAPANESE BEES."—Great novelty, providing endless fun; 8s. 6d. gross; cash with order; sample 2d.—A "Daily Express" advertisement.

The advertisement must have served to induce some people to know something about bees when receiving a toy which resembles a bee by not resembling it!

ARE WE GOOD SAMARITANS?

The **American Bee Journal** is nobly raising a Franco-Belgian Relief Fund to suffering beekeepers in the devastated areas. We would have wished to see, in the name of international brotherhood amongst beekeepers, this fund extended to all suffering beekeepers in the war regions. On behalf of **The Apis Club** and in conformity with its principles we have contributed the sum of five guineas towards this humanitarian and professional relief fund. We sincerely hope that our members will not hesitate, in whatever capacity, to contribute towards it. Send your contribution direct to: "The American Bee Journal Office, Hamilton, Illinois, U.S.A."

"MILLING" METAL FOUNDATION.

Some of our readers are curious as to how the milled type of metal foundation is going to be produced. A hardened steel mill presents itself. Amongst our beekeepers-engineers, both Messrs. W. S. Meadows and T. I. Robinson have independently suggested a sectional one. Other engineers, not connected with beekeeping, have endorsed the suggestion. Mr. Robinson has been working for some time on this original mill and we hope to publish shortly an illustrated article from his pen on its subject. The rollers are made sectional, each ring having 30 cell bases on it. The high points of the first ring fit the low points in the next all the way along, and so one gets the same effect as the soft metal rollers. All the sections are threaded on a key on the shaft and clamped firmly by the nut at the end. It will be seen how easily replacement of broken parts can be effected if necessary. A faulty part can be removed and a fresh one substituted in a few minutes. In fact it is a mystery why a hardened steel mill for wax foundation has not been employed instead of the soft metal one, which easily gets damaged and yet is not even nickel-plated beforehand. As an illustration we learn from one British firm of wax foundation manufacturers that at one time they had no less than twenty damaged rollers beside them! A pin finding its way between the ordinary soft rollers is capable enough of indenting them.

THE AIM OF PERFECTION.

In the words of a British Statesman, "the perfect man is the perfect fool, and the man who never makes a mistake never makes anything."

Encouraged by these sober words, we are doing our best under almost impossible conditions to perform our heavy task. No one is more aware of our mistakes than ourselves, but we cannot help these occurring. When the editor of a magazine has to perform his work hastily, under circumstances of indifferent health, over-worry, and fatigue, and when he lacks even the co-operation of a proof-reader, little wonder that misprints by the dozen occur, and even a drop of full sentences, all of which however have not been thought of sufficient significance to necessitate a special notice, although we quite well understand that a destructive critic will only find much pleasure, when ignoring the many mistakes occurring in other periodicals (produced under very favourable conditions), in looking upon our errors as emanating only from our "scratchy" pen. Destructive criticism is worthy only of the idler.

Since a general meeting of members of **The Apis Club** is proposed to be held next May or June to decide amongst other questions the selection of an editor for this magazine, also the appointment of a publication committee to co-operate with him, we crave the indulgence of our readers whilst we are endeavouring to complete the first volume of THE BEE WORLD. We confess that we do not look upon any language except as a means of expression. Decorated empty phrases are as far from our ability as any ambition of a perfect literature. At best we express original views, which when accepted are not acknowledged, but when differed from at first are readily ridiculed. We hope our successor will be more successful in conducting an impartial policy with better means, apart from better knowledge.

Not longer than two or three years ago the idea of conducting experimental work, independent of official guidance and outside the laboratory, would have been a most amusing suggestion to many people in this Country. At present there is a growing interest in experimental work and in considering the bee literature as such and not as party organs. It will not be with a bombastic feeling when we claim no mean share in the creation of this healthy spirit. But we fear that if not further fostered, it may only end in petty jealousy, and in independent non-productive imitation, instead of a combined mighty effort which brings benefit to the Craft as a whole, and not only to one Association or the other. The Associations that would co-operate in the development of **The Apis Club** scheme should ultimately derive a greater benefit from it than might be gained by selfish seclusion.

ILLNESS OF TWO PIONEERS.

We are grieved to hear of the serious illness of Dr. C. C. Miller, the celebrated American leader, also of Mr. Ernest Root, the learned editor of **Gleanings.** We sincerely wish both of them a speedy recovery.

QUEEN REARING IN ITALY.

Both Signors Bozzalla and Penna have presented us with instructive and neatly produced brochures relative to their queen-rearing methods in Italy.

WORDS OF GOLD.

In a beautifully illustrated and tastefully edited auto-biographical booklet issued by the A.I. Root Company of Medina, Ohio, U.S.A., a copy of which has been presented to us, a reprint of the "Introductory" which appeared in the first issue of **"Gleanings"** is given. The following extract from it is of high moral and practical value: "Please don't be hasty or prematurely positive; and when one of our number acknowledges a fault and makes proper reparation, the matter should be overlooked and friendly feelings renewed on both sides, at once and forever. Please give **facts** all you can without regard to their bearing on individuals, if they are of such a nature as to benefit the masses."

The Arena:
Letters to The Editor.

Criticism is a disinterested endeavour to learn and propagate the best that is known and thought in the world.—Matthew Arnold.

THE STANDARD FRAME.

To the Editor of The Bee World.

DEAR SIR,—Thanks for your kind invitation in the footnote to Mr. Manley's letter, in THE BEE WORLD for October, for further observations re the above, but your own remarks so thoroughly cover the ground, that I am afraid anything further I may say will be very like trying to "clothe the lily."

I would like, however, to make quite clear that whatever I may say, either in THE BEE WORLD or the **British Bee Journal,** is my own opinion only, and is not necessarily shared by Mr. William Herrod-Hempsall. So far as the **B.B.J.** is concerned he has done no part of the editorial work for more than twelve months, and when the word "we" is used, it is done so "editorially" and does not refer to more than one person. No editor, writing in his paper, uses the personal pronoun "I," a fact that I should have thought everyone knew.

Now as to my experience with the 16″ × 10″ frame, Mr. Manley attempts to discount my opinion, because I have not been so impressed by its advantages (?) as to use it in my own hives, and have only had a "slight" experience of it when touring. The word slight, by the way, was not used by me, but for the sake of argument I will let it stand, that my experience with the large frame is "slight," and only obtained while on tour. I have done the work of a touring expert for about 14 years in Notts., Lincs., Sussex, Kent, Devon, Essex, and Lancs., so that my experience in that direction, at any rate, has not been "slight." The 16″ × 10″ is no new thing, and has been advocated by its designer, Mr. Simmins, for a number of years. Mr. Simmins is a well-known bee man, both in this Country and abroad, and would not be likely to advocate anything that he did not think would be advantageous. If the 16″ × 10″ frame is so desirable, and has had such a backing, while the Standard has been the drawback to British beekeeping that Mr. Manley would have us believe, how is it that touring so many parts of the Country for so many years, there were so few 16″ × 10″ frames in use, that my experience of them was only "slight." It is not always absolutely necessary to experiment exhaustively with an appliance to be able to judge as to its merits, any more than it is absolutely necessary to be an accomplished actor, painter, or musician. in order to be a competent critic in those arts. To put an extreme case, the slight experience of a burnt finger tip is quite proof enough to any one of the pain and damage fire will cause without putting one's whole hand in the flame. There are, and always have been, plenty of go-ahead beekeepers in the Country, ready to take up and try anything likely to prove of value, even if considerable expense is involved, as witness the number who took up the "Wells" system some years ago, and bought new hives to practice it. And if the 16″ × 10″ frame had been the good thing it is claimed to be, it would have been more in evidence.

May I touch on the two "weighty" reasons advanced by Mr. Manley in advocating the 16″ × 10″ frame, viz, one can make a square hive, and it is not too deep for 11″ timber? It is just as possible to make a square hive for standard frames; in fact, the first hives W.H.H. and I made were 14½″ square, and held ten standard frames, but neither of us would go back to those hives now, even for that advantage. A three-inch eke under a W.B.C. brood chamber would enable it to accommodate 14″ × 12″ frames, and an easily constructed lift would do the same for single walled hives. For new brood chambers, a narrow strip would have to be joined on to 11″ timber, but that would present no difficulty, while the extra expense of labour and wood would bear no comparison to having to scrap W.B.C. brood chambers. or the whole of single walled hives; in fact it would take no more wood than brood chambers to take 16″ × 10″ frames.

The list of frames in general use is not at all misleading. The sizes given are more or less in general use in the Country to which they refer, although they may be in a minority compared with other Countries, for instance, the frame in general use in Egypt is roughly a little less than 7″ × 7½″, though the users of this frame are in a **very** small minority compared with the users of the Langstroth, or our own Standard.

My notes are running to a much greater length than I intended, but may I trespass a little further on your space to mention another point that, so far I think, has not been raised. It is no unusual thing nowadays for a queen to keep 20 standard frames of comb filled with brood. Such queens will not be satisfied with, say, 11 frames of comb, 16″ × 10″ (Mr. Manley does not say how many he uses, but a square brood chamber, i.e., 16½″ × 16½″ would not hold more than 11). One objection made to two sets of standard frames one over the other is, that the space between the two is a hindrance to the queen. Two sets of standard frames will give roughly 6,000 square inches of comb space. The eleven 16″ × 10″ frames roughly 5,000 square inches. If the extra room is needed, how is it proposed to give it?

Finally those who advocate the 16″ × 10″ frame, appear unable to see, or consider, any other size. It suits their particular locality, or management and therefore it is **the** frame which they would like to see everyone else adopt, regardless of the cost and confusion that would consequently arise. One of the greatest advantages of a Standard frame, in almost universal use in a Country, is that the frames are interchangeable, not only in an apiary, but between hives or apiaries in different parts of the Country, thus simplifying the buying and selling of bees on combs. In my opinion, those who are trying to popularise a frame with dimensions differing totally from those of the standard are, however good their intentions, doing a disservice to beekeeping in this Country far outweighing that which they allege against what they term our "small" Standard. It must be borne in mind that the size of the brood nest, and the amount of surplus stored does not depend entirely on the fecundity of the queen, but also on locality. In some—one might say many—places the use of a full set of 16″ × 10″ frames of comb would mean no surplus for the beekeeper, the bees needing all they could gather to fill up the large combs with brood and honey. True, the number of frames could be reduced, but the long, deep, and narrow brood nest thus secured would be inconvenient to super, and scientifically incorrect.

With the whole of the last paragraph of Mr. Manley's letter I entirely disagree, even granting him the Englishman's privilege of always disparaging his own Country and praising others.

Yours faithfully,

Luton. J. HERROD-HEMPSALL.

THE GUIDING PRINCIPLES IN HIVE EQUIPMENT.

To the Editor of The Bee World.

DEAR SIR,—The controversy about frames is one which must interest all beekeepers. The subjoined table gives a comparison between the principal types of frames.

Type.	Nominal size.	Actual cell area.	No. of Frames = 11 Standard.
1. Standard	14 × 8½	*106	11
2. Deep Standard	14 × 11½	*143	8.1
3. Simmins	16 × 10	*145	8
4. Langstroth	17⅝ × 9⅛	136	8.5
5. Jumbo	17⅝ × 11¼	172	6.8

*Allows for ½″ top bar and ¼″ side and bottom bars.

It will be noticed that there is little difference in effective area between Nos. 2, 3, and 4. The hive in most common use in the U.S.A. is the ten-frame Langstroth. This hive gives an effective cell area of 2720 square inches as against 2342 square inches in an eleven-frame Standard hive; the Langstroth hive will therefore accommodate a queen 16 % more fertile than can be accommodated in the Standard. The majority of good queens are better than this and I believe the use of a double brood chamber is not unusual in the U.S.A. As the queen lays naturally in a circular or oval area in a frame, it is an obvious drawback to the queen to have to pass from a lower frame to an upper frame. The most successful frame therefore is likely to be that which conforms most closely to the capacity of the average queen. Again, it is admitted that the natural brood nest is approximately cubical; it is therefore arguable that the Standard frame should be of such dimensions as will give an approximately cubical brood nest equal to the capacity of the average queen.

As the science of queen breeding progresses, it may be expected that the queen's capacity will progressively increase; a new Standard of frame should therefore be ahead of present requirements. It is also admissible that more than ten frames lead to unnecessary manipulation. Assuming a standard fixed on the above principles, this Standard will obviously fail to give good results in the hands of the two classes of beekeepers who vary from the average, the possessors of very good queens and the numerous owners of very poor ones: to cater for these two classes, it would seem desirable to have two out-sizes of the Standard frame adaptable to the Standard hive by the use of an eke in the one case and by the use of a false floor in the other case.

The following table shows how far various forms and numbers of frames approximate to a cube.

Type.	No. of Frames.	Nominal Dimensions of Brood Nest.	Cell Area.
Standard	11	14 × 8½ × 15⅛	2342 square ins.
Deep Standard	10	14 × 11½ × 13.75	2870 ,,
Simmins	10	16 × 10 × 13.75	2900 ,,
Langstroth	10	17⅝ × 9⅛ × 13.75	2720 ,,
Jumbo	8	17⅝ × 11¼ × 11	2752 ,,

Of these the deep standard approximates most closely to the cubical form and I venture to suggest would give the best results as the future British Standard; made 2½″ deeper still, the brood nest would be almost exactly cubical and the cell area sufficient for the most prolific queen. American experience, however, points to practical difficulties arising out of the use of frames deeper than 12 inches, probably owing to the weight of frame and the difficulty of withdrawing deeper frames without crushing bees.

Short of adopting American Standard dimensions and Standard hives, which without doubt would be of the greatest benefit to consumers of bee requisites and ultimately to the manufacturer, I venture to suggest that a 14″ × 11½″ frame is the most suitable Standard for the future.

For my own part, I intend to adopt the American Standards, a close perusal of the Root catalogues has disgusted me with the unscientific, unstandardised, and expensive products of our numerous small appliance makers; and in future my orders will go to the U.S.A. to the great benefit of my pocket, my patience and time in ordering future material, and I hope to my bees. As regards these latter, I have little doubt that they will do as well in the Langstroth hives as in any British hive.

Yours faithfully,
Southport. E. O'BRIEN.

[We have left Lt.-Col. O'Brien's estimates unaltered.—Ed.]

THE BEST WINTER BEE DIET.

To the Editor of The Bee World.

DEAR SIR,—Re your extract from **The Canadian Horticulturist and Beekeeper** on page 71 of THE BEE WORLD, perhaps you will allow me to make a few remarks.

Both you and most other beekeepers seem very certain that good honey is the best of all foods for bees to winter on. Certainly this seems logical and natural. Honey is the natural food of bees. But there are one or two considerations to be taken into account.

Personally, I have **always** found bees to winter **much** better when supplied almost entirely or entirely with good sugar syrup.

For years I could not understand this, but finding year after year that it was so, no matter how good quality the honey was (and I have had several years' experience in three totally different districts), I came to the conclusion that it was because there was more waste matter left over in the digestion of honey than in that of sugar syrup, and now in reading Mr. W. Z. Huchinson's book, I find that he has the same opinion exactly, so that though I am not of any account in the Bee World, yet this idea is confirmed by one of the most successful of honey producers in the world. I quote you from this book below in case you may think it of sufficient interest to print in your magazine.

Mr. Hutchinson says:—

" It has been asserted that honey is the 'natural' food of bees and nothing can be gained by substituting something else. It must be remembered that the 'natural' home of the bee is that of a warm climate, where there are no long spells of confinement caused by continued cold. Honey is, of course, the 'natural' food of bees, but this fact does not prevent their dying sometimes as the result of its consumption, when a diet of cane sugar would have saved their lives.

" In my opinion, food is the pivotal point upon which turns the wintering of bees in our Northern States. Food is the fulcrum, and temperature the long end of the lever. The whole question in a nutshell is this:—The loss of bees in winter, aside from that caused by diarrhœa, is not worth mentioning. It is diarrhœa that kills our bees. What causes it? An over-loading of the intestines, with no opportunity of emptying them. Cold confines the bees to their hives. The greater the cold, the larger are the quantities of food consumed to keep up the animal heat. The more food there is consumed, the sooner are the intestines over-loaded. A moment's reflection will make it clear that the character of the food consumed has an effect upon the accumulation in the intestines. In the digestion of cane sugar there is scarcely any residue.

"Honey is usually quite free from nitrogenous matter, being well supplied with oxygen, and, when practically free from floating grains of pollen, is generally a very good and safe winter food, although not as good as properly refined sugar syrup, which never contains nitrogen, but possesses more oxygen. The excreta from diarrhetic bees are almost wholly pollen grains in a digested or partly-digested state, with a slight mixture of organic matter. What over-loads the intestines of the bees, is this nitrogenous matter which they consume, either as grains of pollen floating in the honey or by eating the bee-bread itself.

" Repeated experiments have proved beyond a doubt that, as a winter food for bees, cane sugar has no superior. With this as an exclusive diet bees never die from dysentery; and, if kept in a temperature ranging from 35 to 42 degrees, they are all but certain to winter successfully."

I have taken the trouble to copy out the above, as I feel sure it will be of interest to your readers. You will probably have something to say yourself. For myself, I can only say that I have long been strongly of the opinion that this is the one and only way to keep clear of I.W.D. in districts where it is prevalent.

In this I believe, I am right in saying that Mr. S. Simmins agrees. Mr. Hutchinson's opinion is not one to be lightly brushed aside. I realise, of course, that he speaks of wintering in Michigan—a far colder climate than ours.

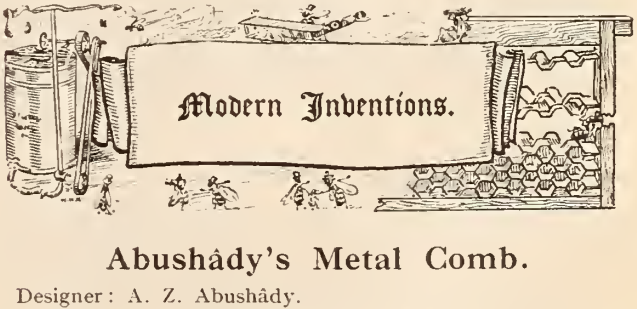
Yours faithfully,
Brightwell, Wallingford. ROBT. B. MANLEY.

[No one will dispute the knowledge and authority of Mr. Hutchinson. But just as a reminder that **no one is infallible,** we would quote the following valuable remark embodying a principle emphasised by C. P. Dadant, which we have always adopted for ourselves: " A man, who knows 'all about bees,' and does not believe that anything more can be gained by reading Bee Journals, new Bee Books, etc., will soon be far behind the age. Yet, as what is written in the journals and books, ours included, is not always perfectly correct, every beekeeper should try to sift the grain from the chaff."

Mr. Hutchinson's objection to honey feeding is based on the waste products in **impure,** although otherwise wholesome honey, the impurity being mainly confined to pollen grains. Our quotations, relative to experiments conducted abroad with good honey, speak for themselves. No doubt, refined cane sugar syrup, free from pollen, is a better diet, when the effects of prolonged confinement are taken into consideration, than a honey-pollen mixture. It is scientifically correct therefore to advise the removal of pollen-containing combs from the hive before wintering, although it is not always possible to entirely rob the bees of such stores, which will not be needed till early spring breeding commences; and, even then, a pollen diet may do harm, should prolonged confinement, through unfavourable weather, accompany over-feeding, due to activity. Its absence, however, would handicap breeding. To the best of our knowledge, Mr. Simmins' objection to honey stores in winter, and his preference of medicated syrup stores, is merely a policy of safeguarding the bees against infection through contaminated diet. But we cannot believe that a diet deficient in **vitamines,** not to mention other non-carbohydrate constituents, which have no appreciable residue and which help in constituting the qualifications of a complete food, is a better article than the latter. It is misleading therefore to consider this question either superficially or from one aspect only. For instance, is it not a fact that no few beekeepers have been practising syrup feeding in the autumn and yet did not escape disease? Successful wintering depends, as Mr. Manley knows, not only on good dieting and a favourable hive temperature, although both are very important factors. The strength and age of members of the colony, the type of frame used, the relations of the stores to the cluster, the variable adaptability of different strains to inclement weather, amongst other factors, must be considered. A comb may not contain other than good mature syrup and **a minimum** of pollen, whether capped or otherwise, and generally the latter, which may escape the attention of the apiarist, but which, nevertheless, may suffice in creating a vicious circle of ill health through undesirable waste products. We fully agree therefore, with the practice of removing, to the best of the apiarist's ability, all pollen in the hive, prior to wintering, and returning part of it early in the spring. Hence we believe that syrup as winter food, in the presence of pollen, is not better but just as bad, if not worse, than honey and pollen. The inference is clear. Why not refine our honey, if necessary, and refeed it to the bees? There is no real weight in the suggestion that the addition of more digestive ferments will spoil the quality of the honey.

It seems that bees resort to liberal pollen feeding in winter only when obliged to do so through chilly weather. Only by good insulation, and by considering in a thorough manner all the other factors entering in the healthy life of the bee, can we then arrive at the best combination of preparations that will ensure successful wintering. No doubt such a combined formula will include more than the quality of the food and the temperature of the hive. In our opinion, it should include an encouragement of cleansing flights, whenever a temperature of approximately 50° F. is reached. By controlled artificial heat this can be secured, and the stimulated bees will be sufficiently warm, through activity and otherwise, to withstand unfavourable temperature for a short period.

In short, the problem of wintering, which has been puzzling the apiarists in the cold parts of two hemispheres, will only be solved by a new and a more considered formula. We doubt that it will ever include substituting an incomplete unnatural diet for a natural one although the latter may need to be refined and judiciously supplemented under certain conditions.—Ed.]


Modern Inventions.

Abushâdy's Metal Comb.

Designer: A. Z. Abushâdy.
Partly illustrated by: King's Patent Agency.
Introducers: Adminson Ltd.
Manufacturers: The Graveney Motor & Engineering Company.

It is not unnatural that beekeepers, lacking a sufficiency of movable wax combs at a critical time in the management of their bees, should deplore the shortage and express a wish for the existence of a workable artificial comb. That aluminium should be thought of as a suitable material (although so far held a captive to wax lining and wax spraying) again is not surprising. The idea of a metal comb is not by any means new, but although the type of artificial comb under consideration is an engineering achievement and a result of a greater appreciation of the habits of the Honey Bee, and may well justify the claim of a perfect artificial comb that surpasses anything of its kind in existence, it will not be of any value to practical bee culture unless it will ultimately find its way to the apiary of the average modern apiarist. This is quite possible in other Countries, where the cost of metal and labour is proportionately not so high as in this Country, and where the demand for an artificial comb is greater. Nevertheless, there is every hope that the economical obstacle may be ultimately overcome in this Country.

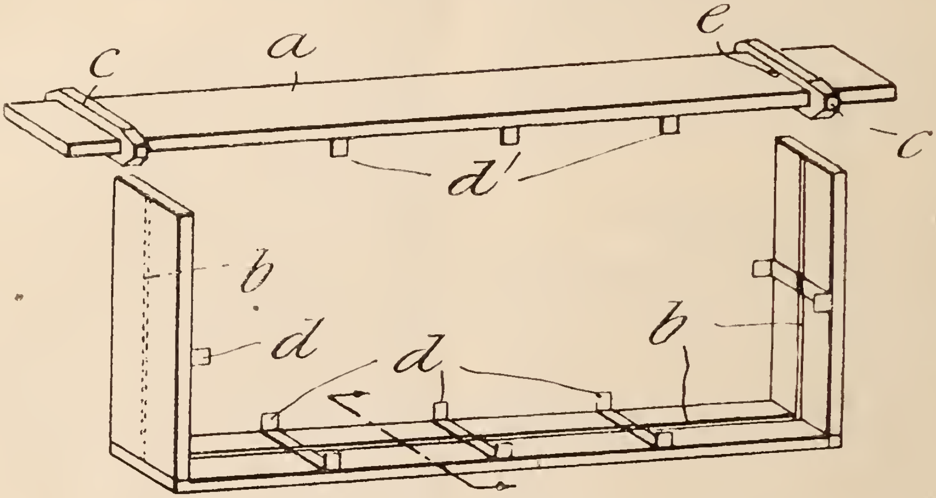


Fig. 33.—Metal Comb Frame.

a—represents a detachable top bar screwed on and off to the side bars at **e**; **b**—represents internal central grooves in the bars of the frame to accommodate the pin clips **d**, which hold together the foundation and comb within the frame; **c**—represents a detachable cast metal spacer for adjusting the distance between one frame and the other.

In the words of a celebrated American author, "**good straight worker comb, not too old, is the most valuable capital of the apiarist.**" He was referring of course to the wax comb. His words were written prior to the recent introduction of the metal article on a commercial basis. When an artificial comb, possessing all or at least most of the desirable qualities which we have already analysed in this magazine can be realised, the value of the apiarist's investment in his always ready and everlasting comb must be greatly enhanced. He will then be the happy possessor of a precious capital, which practically never depreciates.

Up to the present, beekeepers do not possess, in the shape of a complete comb, other than (a) the wax comb, built by the bees, and (b) the MacDonald metal comb, which, although intended to save the bees the trouble of building a complete comb, has the obvious defect of weakness and susceptibility to being damaged without being adapted to repair. The latter in appearance is a comb, but in reality is incomplete, since it lacks a foundation; and the process of crimping adopted in its production only gives it a semi-base, that is a perforated one to which the bees object. The hole in the base of each cell has to be filled by the bees with wax before the queen would accept to lay in it, or before the cell would be utilised for the storing of food.

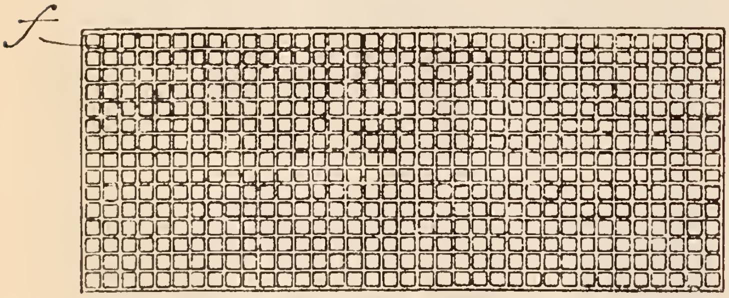


Fig. 34.—" Square-celled " Metal Comb.

The cells, **f**, in the " worker " type number about 26 to the square inch, and in the " drone " type 18 to the square inch.

Further, the existence of such holes greatly contributes to the weakness of a crimped metal type of comb, especially as solidity counts for much in a honey comb, and more so in an artificial comb which can neither be repaired by the bees nor by the manufacturers. The wax comb has the great advantage of being generally adapted to repair by the bees whenever it gets damaged, provided it is not grossly destroyed; and since the wax is marketable, the beekeeper is not much the loser. It is a different case with a metal comb which is not firm, and when damaged, its material has no marketable value in comparison with wax; and further, owing to its mode of construction, and being a fixture, one cannot replace a damaged part by a new one. Nevertheless, the crimped type of comb is capable of improvement at least by substituting thicker strips for the present ones which amount to no more than aluminium foil, the poor resistance of which to any sharp instrument is well understood by all laboratory students, apart from metal workers and is sufficiently understood also by practical people in general. Yet one feels sure that whatever improved metal combs are introduced in future, the crimped metal comb will still possess good features, not least amongst which is its lightness. When new, it is perhaps not ideal, but when perfected by the bees, there is no question then that a queen will not lay in it readily as in a wax comb. Its disadvantage regarding its perforated cell bases will only be refelt after it is cleansed and sterilised by boiling. The MacDonald invention cannot be totally brushed aside except by the destructive critic who lacks a sense of imagination and appreciation.

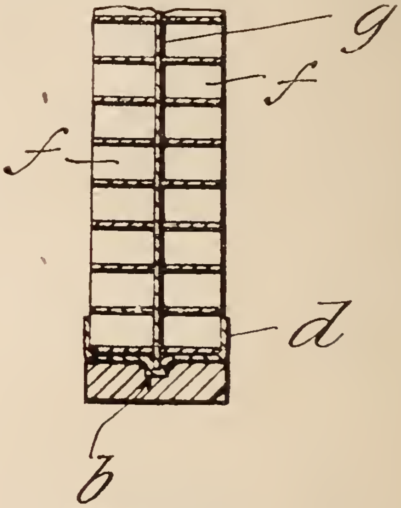


Fig. 35.—Transverse Longitudinal Section of Square celled Metal Comb, **g** being the foundation or the plain midrib.

We have sufficiently dealt before with the advantages of the metal comb over the wax comb, with the question of heat dissipation, with the fallacy of the " wax bait " theory, and with other questions connected with the metal comb in general, that little service will be rendered by utilising our limited space for a repetition of previous annotations. Even a more exhaustive critical examination will not convince some beekeepers to believe that the habits of the Honey Bee in America and the United Kingdom, under fairly equal conditions, are practically identical; that the metal comb previously used is transformed finally into a wax comb superimposed on metal cells, most of which may be lined with cocoons; that if such a comb has proved a success in the wintering of bees in the coldest parts of the States as reported in its Press, it should prove at least equally successful in the milder winters of other cold Countries; that the Honey Bee, which is capable of the elaborate perfection of an incomplete metal cell, is equally capable of the wax lining or varnishing of the cell walls, should it consider this necessary, yet it is significant that this is not done; that bees do **not** hibernate within the cells in winter as is generally believed and as preached by people who do not trouble to learn beforehand instead of scorning and ignoring the patient researcher. Ever with many people, who talk about testing and experimenting, a profound ignorance of the principles of research work is manifested, and what they would call a thorough testimony is no more than mere playing with the elementary principles of practical beekeeping.

The MacDonald comb in our hands proved, generally speaking, quite fit for extensive breeding purposes, both in cold and mild weather, once the comb is perfected by the bees. Chilled brood will not be the fault of the comb so much as of careless beekeeping. The metal comb will not create a trouble which is as old as the wax comb, and is obviated only by sensible and watchful methods of management. Further, to appreciate the value of an artificial comb it is idle to compare it in the first instance with the wax comb, which is often non-available, but with the wax foundation which is the only commercial frame fitting that has been previously obtainable.

The object of the invention under consideration is to provide an artificial comb which is both complete and durable. Several types present themselves. But for various reasons it will be more serviceable to briefly examine here only one type which has a special distinction over other types that cannot be economically developed and which do not equal the MacDonald comb in engineering merit. The present type, on the other hand, is in our humble opinion a far greater achievement than the Quinby, the MacDonald or any other artificial comb that has been experimented with before. Suffice to say that it has been considered an engineering impossibility by several leading engineering establishments in Great Britain, which refused to be tempted by any remuneration to " waste " their time in producing an experimental model.

The comb is essentially **detachable** in character. It **consists of** a separate metal foundation proper (or only a plain mid-rib) accommodated within an internal groove to the frame bars which groove also holds supporting pin clips to the two metal " webs " of the comb, each of which is placed in apposition on either side of the foundation (or the (mid-rib). The " webs " are preferably made of more than one section placed side by side without necessarily creating any waste in the substance of the comb.

For the type of the **cast** metal comb, a circular cell is preferable, especially as it is easier to cleanse and is quite compatible with all the requirements of the Bee. In fact, it is generally what the Hive Bee attempts naturally to build.

The opening of each cell has a diameter of $\frac{1}{4}''$ and possess slightly tapering walls, producing a base which should have a diameter shorter than the external one by not more than $\frac{1}{32}''$, and preferably less, so as to save metal and weight, although it must be appreciated that the achievement of a cast metal comb is dependent amongst other factors on favouring a circular cell and a tapering wall, much as some beekeepers will assert that a queen will reject such a cell or that it will be a failure for breeding purposes.

The non-appreciation of these important " little " points has been a great obstacle in the development of a perfect metal comb, in the same manner as the " wax-bait " theory has been a great hindrance to the development of the non-wax comb foundation.

That bees will reject anything but hexagonal cells or that in an artificial comb of detachable parts, which can be easily cleansed, a square cell is a source of weakness, or non-compatible with cleanliness, is not a sound contention, because it shows a failure of appreciating the quality of instinct which the Honey Bee possesses, and also indicated a love of slavery to custom, apart from the fact that where detachability and solidity exist in a comb, a right angle to a cell will not be productive of a nuisance any more than will an obtuse one. It is a different case of course with an acute angle. Triangular cells may therefore be ruled out of the question, although one admits that the bees are likely to put them internally into a suitable shape, if made sufficiently large. This however means a great waste of labour and material. In these preliminary notes the reference to these facts is merely from the point of general interest. We are concerned primarily with the circular celled cast comb which is durable, detachable, easily sterilisable, and which has a distinct removable foundation that can be used alone for securing complete wax combs on either side of it, or in conjunction with metal " webs," thus presenting in the latter case a complete artificial comb, in the true sense of the word, which would be immediately serviceable for the bees.

Time will show with what moderation or exaggeration in estimate has this invention been reviewed.

Autumn Leaves.
from bygone seasons
W.H.K.

THE "DISTEMPER" OF BEES. (‡)

Bees, when most in health, evacuate the dregs of their food in a liquid form. When grouped or clustered in the hives, they fix themselves in such a manner, as not to incommode their neighbours therewith; all of it falling to the bottom of the hive. But as pure honey does not form a food sufficiently substantial for them; whenever they feed too long upon it, without having any bread, they grow weaker daily; and this weakness increases to such a degree, that they, at last, are unable to quit their hives, or even to disengage them selves one from the other. It is on these occasions that, not having strength enough to move ever so little, those fixed above drop, on the others beneath them, a clammy liquid substance, which wets them, spoils their wings, and stops up the canals through which they perspire. Such as should yet be quite free from this distemper, lose their lives merely by the contact of the sick. An experiment I made on this occasion will give you a much better idea of this distemper, its symptoms and effects. I had fixed some bees in a hive, without leaving them any honey-combs; or even the liberty of seeking their food abroad. However, to compensate for this, I supplied them with pure honey. At first I let them feed but sparingly, and kept them alive above three weeks: however, I afterwards was too bountiful; they eating so much, that they soon had purgings, they wetted one another; and, for some days after, they all died; and were as wet, on this occasion, as if they had been dipped in water thickened with honey.

(‡) The Natural History of Bees, p. 448. Translated from the French in the form of a dialogue mainly from Réaumur's **Memoirs intended for a History of Insects**, 5th Volume. Published by J. and P. Knapton and P. Vailant, London, 1744.

THE "DOUBLE-SIX MASHEATH" HIVE.

So-called from its accommodation of two six-frame stocks in tiers or otherwise and on W.B.C. principles, at least for one form of management, this **non-plinth** hive introduced and manufactured by its designer, Mr. M. Atkinson, of the Bee Park, Fakenham, is rapidly growing in popularity. It is one of a series of "Masheath" hives, all of which have in common several good features.

Mr. Atkinson has favoured us with excellent detailed notes from his prolific pen on the management of this hive. If published in a book from, these may well serve as a helpful practical manual to many a beekeeper.

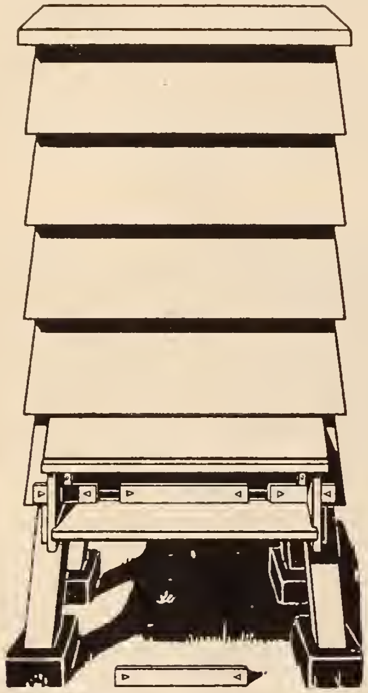


Fig. 36.—The "Double-Size Masheath" Hive.
(Provided with Porch).

The designer of the Masheath Hive may also be congratulated on turning the main disadvantage of a W.B.C. hive into some advantage, although the same end could be secured with a simpler pattern, requiring less wood and labour.

As he points out, in preparation for the honey flow, the inner chambers and bees may be re-arranged, using a twelve-frame chamber for one strong force with one queen, supered with any ordinary W.B.C. super fittings, working then as a regular surplus producing hive, with the two entrances open, or one only if sufficient. It is immaterial whether the flight board division block is removed or not; its removal is instant if desired. After the honey flow and removal of surplus, twin colony working can be resumed for the purpose of autumn breeding and storing up for winter. The hive during the winter will carry its two colonies in one or two tiers of six-frame brood chambers each, to repeat the season's work the following spring.

The popularity of this hive amongst W.B.C. patterns is well deserved, and the workmanship displayed in its production leaves nothing to be desired.

KNIGHT'S WIRE GAUZE QUILT.

We have been presented by Mr. T. Knight, of The Beeches, Carshalton, Surrey, with a **wire gauze inspection quilt** intended to afford facilities for observations of combs **in situ** (whether to be examined afterwards or otherwise) with a minimum of disturbance to the bees. The quilt is meant for temporary use only.

For permanent use we have employed for certain colonies and mating nuclei perforated zinc quilts, which, although not permitting ideal observation, have the distinct advantage of being easily cleansed from propolis, and for this reason are to be preferred.

The Knight wire gauze quilt, on the other hand, is made of malleable strong wire and is provided at the edges with tape binding. It can be folded and placed in one's pocket in the same manner as a wire veil is carried. In this respect it has a further advantage over the perforated zinc quilt.

THE WHYTE QUEEN EXCLUDER.

Since the wire queen excluder came into popular use, the main objection to it rested with the liability of wrong spacing through the accidental bending or loosening of the wires, and also with the difficulty of cleansing it from propolis. But the weakness of the appliance was always considered its defective feature, although its good points were thought of sufficient importance to compensate for this.

Messrs. J. & R. Whyte, of Glasgow, now claim to have solved the difficulty in creating a more resistant type of wire queen excluder. Their claim is substantiated

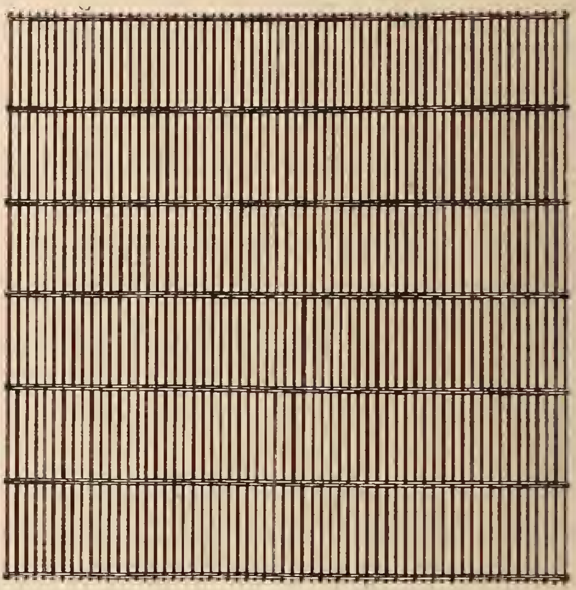


Fig. 37.—The Whyte Queen Excluder.

The Whyte Excluder is made throughout of hard drawn steel tinned wire. Fig. 37 shows an illustration of a non-framed excluder of this type for a ten-frame hive, also a depiction of the method of attachment of the wires. The excluder may be profitably framed.

It is decidedly the best excluder of its type that has so far been evolved in this Country.

TAYLOR'S COMPULSORY FEEDER.

This is a rapid feeder originally introduced by Mr. E. H. Taylor, the well-known manufacturer of Welwyn, Herts., for the purpose of a dietetic and drug treatment of infectious bee diseases, occurring during the honey season. It consists of framed tiers of metal troughs, between the uppermost of which and the top bar of the frame a bee space is provided. The feeder is intended to take the place of a brood chamber frame; and when in use, the hive should be standing perfectly level, so that the medicated syrup does not spill out of the feeder. It should be placed "in the centre of the brood nest by removing one of the frames, the object being to get the bees to take the syrup down immediately the first sign of disease is noticed." They are more likely to take notice of such exposed syrup than when it is presented differently.

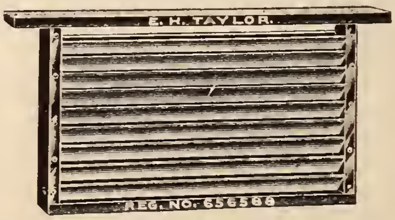


Fig. 38.—Taylor's Compulsory Feeder.

We do not propose here to examine the utility of this good feeder from the point of view of medicinal treatment. We give it a literary review because of its possible usefulness in the **internal administration** of clean water to the bees, i.e., within the hive, bearing in mind the confirmed fact that " a sluggish body of water, if near an apiary and used by bees as a water supply " is one of the feared agents in the transmission of **Nosema Disease.**

For the internal administration of water to the bees by this method which we suggest, we do not think it is necessary to place the feeder in the centre of the brood nest (especially as it would be productive of trouble). Its re-filling may not be frequently needed except during hot weather and at the height of the breeding season.

For such a purpose it is of course suitable to be adopted only in a small apiary. Even with a limited utility, the feeder merits to be better known.

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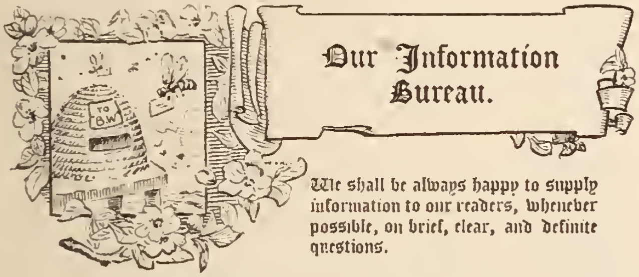

Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

A CHESHIRE EXPERIMENT.

Q. Is it true that Cheshire (and not G. M. MacDonald) was the first to introduce the idea of the **Metal Comb** ? Is it a serious difficulty to improve on the American pattern ?

A. We cannot trace in Cheshire's available writings any experiment or suggestion relative to the evolution of a metal comb. So far as early experiments are concerned, Quinby (and possibly others) had made attempts, but the crude models evolved did not prove a success. The credit undoubtedly belongs to George MacDonald for the evolution of the first practical comb of its type. In spite of its defects, his invention has certainly marked the dawn of a new era in the development of modern hive equipment. More perfect types of an artificial comb can undoubtedly be created, but the obstacle which has to be overcome is one of a commercial development. An invention which belongs only to the museum will directly benefit no one, although indirectly it may greatly serve to encourage research.

WHY NOT A " DEFICIENCY " DISEASE ?

Q. What evidence is there that **I.W.D.** is not a deficiency disease ? **Nosema** appears to be not at all serious, and one easily combated. It is difficult to believe that **Nosema Disease** and the " Scourge" are identical

A. We know the natural diet of bees, and there is ample evidence to show that in spite of the presence of good natural food, susceptible bees suffer from I.W.D. ; whilst the complete absence of natural diet, at least in winter, has not produced a " scourge." **Nosema Apis** is a protozoon which is not so resistant as a bacterium. Furthermore, various strains of this protozoon are bound to differ in pathogenic features. Many other factors contribute to the causation or to the prevention of disease, and the net result is its incidence or absence. It is quite possible that the lack of **vitamines** in the bee diet for a long period will produce ill health and predispose to infection, but this is quite a different thing from a distinct epidemic disease which has been found associated with a distinct organism and which has been reproduced artificially. Even in America, where the standard of beekeeping is highly respectable, the elaborate researches of Dr. White have confirmed the infectious character of this disease, at any time of the year, although he has negatived its malignancy.

THE " WAXING " OF METAL FOUNDATION.

Q. Would it not improve metal foundation to " wax " it ? Also, would it not be more economical to stick ordinary wax foundation to a thin plain metal sheet ? What is the difference in terminology between " foundation," " midrib," and " support ?"

A. The first two queries have already been thoroughly treated in THE BEE WORLD. Suffice here to say that both theory and practice are against the artificial sticking of wax to metal, wood, or the like, when a comb is built on the wax itself, since there is no safeguard against the separation of the wax coat from the solid support which may buckle or split. It is a different case with wax cells elaborately built by the bees direct on the metal. The experiments which have been conducted in this Country and abroad, years ago, both with metal and wooden supports for wax foundation, have clearly shown again and again the failure of such supports, and that the method is non-economical. Neither a plain metal sheet, nor the intelligent device of a corrugated metal core, has served to safeguard against the blistering of wax foundation, which when once begun is likely to spread, resulting in a disaster to the comb, especially in transit.

The features of the Metal Foundation belong to the views which have led to its development, and if these were not sufficiently appreciated, it would be just as well to stick to wax foundation, since a real compromise between the two could not be effected, whilst coating metal foundation with wax would simply be a wasteful practice, and would not serve a good purpose, but rather the contrary.

Tastes may vary in preferring one type of metal foundation to the other but both have good points, although no doubt " sharp-ridged " metal foundation with a depth of, say, $\frac{3}{16}$", would present facilities for immediate egg laying, thus saving time and permitting breeding in conjunction with wax building. In this respect alone this type of foundation may be considered an improvement over the " round ridged " type, and may well rival a complete metal comb. The improvement would be due to the depth of the ridges and not to their sharpness. This is however purely a question of machinery. Wax coating, can find no place in effecting any improvement. It can only help in defeating the objects of metal foundation.

As for the correct definition of the words " foundation," "midrib," and " support," we may remark that the three words are interchangeably and loosely used in the same way as the terms " division board " and " dummy " are employed.

The following may serve as rational definitions : (1) a **Comb Foundation** is a printed sheet of any material suitable as a comb basis, and is intended to *guide* the bees in their wax building, direct on its substance ; (2) a **Comb Midrib** is the central partition between its side sections ; and (3) a **Foundation Support** is a staying device for enforcing the resistance of the comb foundation.

From these definitions it will be seen that a central embossed wax sheet in a hive frame serves as comb foundation, and is naturally a mid-rib for the comb to be built on it finally ; whilst the wire embedded in it acts as its support within the frame. Metal foundation on the other hand, as we have repeatedly indicated, would act as foundation proper, a midrib, and a self-support within its frame.

Another case of illustration is a frame wire. It serves at present as no more than a foundation support. But supposing a hexagonal meshwork of resistant and suitable wire correctly spaced could be adopted in place of embossed wax or stamped metal, then the wire would jump to the position of a comb foundation, a partial midrib, and a self-support. This is of course an extreme case of illustration.

REMEDY FOR WASP POISON.

Q. There are far more people (I do not mean beekeepers) who suffer from a wasp sting to a greater extent than from a bee sting. I find vinegar a most effective and a handy remedy for both. Have you tried it ?

A. We have not tried vinegar as a remedy for stings, and we presume our correspondent is correct in its application in the case of a wasp sting, which is alkaline in reaction, according to the observations of Mr. Edward R. Speyer, F.E.S., of Oxford University. But we should not have thought it to be of any value for a bee sting, considering the acid reaction of the bee poison.

It is true that these toxins, irrespective of their reaction, are capable by their nitrogenous nature of setting up an inflammatory response when inoculated, but it is also feasible to imagine that by counteracting their chemical reaction may succeed in producing less injurious poisons.

EXCLUDER FOR EGYPTIAN QUEENS.

Q. Considering the small size of Egyptians, a difficulty which you have not solved lies in obtaining suitable queen excluders. Can you offer a suggestion?

A. We have no doubt that such beekeeping engineers as Messrs. J. R. Whyte of Glasgow and London, and Mr. W. P. Meadows of Syston, will be able to manufacture and supply this excluder (whether of wire or sheet zinc) should there be a sufficient demand for it. Correspondents who are keeping Egyptian bees or intend to acquire them, and have been writing to us on this subject, are requested to communicate direct to these gentlemen, or to other makers of queen excluders.

The Bee Laboratory.

FUNGUS DISEASES OF BEES.

By ANNIE D. BETTS, B.Sc.

In the early days of bee-disease research, when neither microscopes nor methods of preparing specimens had reached their present perfection, and the cultivation of micro-organisms in " pure cultures " was unknown, it was not uncommonly believed that many, if not most, bee diseases were due to infection by fungi. More accurate methods of work have however shown that the commoner diseases are all due either to bacteria (odourless foul brood, sour brood), protozoa (I.O.W. disease), or to a filter-passing virus—a micro-organism so small that it is invisible under our most powerful microscopes, or only visible when special methods of observation are employed. To this last class belong sac brood, and possibly strong-smelling foul brood (it having been shown that **Bacillus alvei** is not pathogenic to brood, though usually present in cases of the disease). True fungus diseases of bees do occur, but they are comparatively uncommon. It is proposed to give here a short account of these diseases, their signs, and cure.

The subject is not only of purely scientific interest; for there is every possibility that the spores of these fungi may have been imported from the Continent with Dutch or other bees—especially those sent over in their native skeps—and outbreaks may consequently occur here and there in Britain during the next season or two.

Two main types of fungus disease are known. They are fairly widely distributed, but do not occur everywhere, being unknown in many districts even of those Countries where cases are fairly plentiful. The following details concerning them are taken mostly from the writings of Dr. Maassen, of Berlin, who has done a considerable amount of work on these diseases.

The more deadly of the two types is known as " stone brood " or Aspergillusmycosis. As its more technical name implies, it is caused by a fungus of the genus **Aspergillus.** This genus is characterised by the possession of mop-like spore-bearing branches or conidiophores—the strings of the mop being represented by chains of spores (conidia), each one of which is capable of reproducing the fungus. As 400 spores per conidiophore would be a modest estimate, and the conidiophores number at least 3,000-4,000 per square inch, it may be imagined that the fungus can spread very rapidly once it is established in suitable surroundings. The species chiefly responsible for " stone brood " is **Aspergillus flavus** (yellow-brown); but in one case the causal fungus was found to be **Aspergillus fumigatus** (a greenish species).

The brood is attacked first. The affected larvæ and pupæ dry up and are converted into hard, odourless, friable, greyish or yellowish mummies. Later on the heads of the mummies become covered with a brownish-yellow fungus growth, which is sometimes so luxuriant as to give affected brood comb the appearance of pollen-filled cells. At about this stage, the adult bees begin to be attacked by the disease. The population of the affected stock dwindles; the abdomens of the dead bees are often stony hard and are permeated by the mycelium of the fungus. Cases have been known where scarcely any brood disease occurred, yet the adult bees died in large numbers. Drone brood, and especially drone pupæ, appear to be more susceptible than any other inmates of the hives.

The methods of natural spread of the disease are not known, but it is very possible that the fungus begins its career in the hive in the innocent capacity of a " pollen mould," and spreads thence to the brood. The disease is undoubtedly disseminated by the beekeeper by careless interchange of combs from affected stocks to healthy ones. Honey pressed from affected combs and fed to bees will also communicate the disease.

Badly affected cases should be totally destroyed by fire, and the hive disinfected as for a bad case of foul brood. If it is desired to save a mildly diseased colony, the bees should be shaken off their combs on to a sheet of paper (which should afterwards be burnt) and allowed to run into a clean hive. The old one should be disinfected, and all combs containing pollen, as well as the diseased brood combs, burnt. It would be wiser not to use the honey from a heavily infected stock for human consumption, as **Aspergillus flavus** has been known to occur in the human nasal passages.

The other form of fungus disease, known in Germany as " chalk brood," much resembles " stone brood," but the mummies are white to greyish, not yellow, the spores of the fungus being found on the grey portions of the growth. The causal organism is a very peculiar and as yet unnamed fungus, in all probability closely allied to the common white pollen mould **(Pericystis alvei),** but quite distinct from it, both in appearance, and preferences as to food materials and temperature requirements. Dr. Maassen, by some inexplicable misunderstanding, assumed that this fungus was identical with **Pericystis alvei.** They differ in the following characters, among others: *

Pericystis alvei.	**Chalk brood fungus.**
1. Is reproduced mainly by the jointed segments of its mycelium. Its cyst spores are probably degenerate, and appear not to be capable of germination.	Is reproduced by the spores enclosed in the globular cysts.
2. Will not grow at 90° F., but starts growth when temperature falls.	Grows well at 90° F., the temperature of the normal brood nest.
3. Grows poorly on bee larva-bouillon agar, or on bee brood.	Grows well on both.
4. The globose cysts contain simple spherical transparent spores.	The cysts contain spherical bodies, each of which contains a number of very small spores.

" Chalk brood " is not a serious disease; it often appears and disappears spontaneously, and no special precautions are needed to get rid of it, beyond destroying the infected combs.

A case of a disease very similar to " stone brood " is described by Mr. T. W. Cowan in the **British Bee Journal** of 1881-2. The outbreak occurred in Denmark in 1880, and was caused by a fungus of the genus **Claviceps** (the fungus of " ergot of rye.") Here again, the drone brood was the first to be attacked, then the worker brood, and finally the adult bees.

Though undoubted cases of fungus disease have not so far been observed in the British Isles, it is, as has been said, very possible that they may occur during the coming season. The writer will be very pleased to examine any specimens of suspected comb sent to her; but does most earnestly request correspondents to pack said specimens in a **strong** tin or wooden box, in order to avoid disseminating disease, and to give the specimen a reasonable chance of arriving undamaged.

[Our readers will forgive on this occasion the absence of instructive illustrations to accompany Miss Betts' article. We hope these may appear in future. Her address, to which specimens of suspected **Fungus Disease** should be **directly** sent, is: " Hill House, Camberley, Surrey." No doubt, they will avail themselves of her gratuitous offer, should the occasion arise, and without rendering such a service an unnecessary worry to herself.

The opportunity is fitting for recording once more our appreciation of her collaboration in the editing of this magazine.—Ed.]

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*Readers interested in botanical details of **Pericystis alvei** are referred to my paper on the subject; there are copies in the Library of **The Apis Club.**

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their school or nationality, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

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⁂ Membership of the **Apis Club** is open to all practical apiarists everywhere, as well as to all lovers of the Honey Bee. Annual Membership Fee: 7s. 6d., and includes free delivery of this Magazine, which is issued only to members of the **Club**.

Vol. I. No. 7. DECEMBER, 1919. Monthly.

Editorial.

THE PASSING OF 1919

The closing of a memorable year cannot be watched silently.

For the first time in the history of the human race the International Brotherhood Movement, both scientific, literary, social and industrial, is the ideal for a sorely pained world that once abhorred it. The terrible war which has definitely established that might is **not** right, has equally established, to the surprise of many chauvanists, that warfare victory **is** a form of defeat and that the only hope for the suffering human race lies in co-operation, in the refinement and furtherance of its best faculties, and in the application of its wealth of knowledge to construction and progress. The alternative is a more miserable world not fit for human existence, as admirably emphasised on scientific grounds by Professor Frederick Soddy, F.E.S., the brilliant author of "Science and Life."

The broad-minded apiarist will therefore review the passing year from a human point of view before any other, and will not fail to grasp that, whatever his other spheres of interest, his social status, and his land of birth may be, and wherever he may be located, he can contribute much as an individual, profiting by the new lessons he has learnt, towards the alleviation of his fellow creatures' sufferings, and as much as he can to the progress and contentment of his bees, when he limits his interest.

The principle has all the bearing on the advancement of apiculture, an applied science which is the common property of the human society. Mr. Isaac Hopkins, the celebrated international apiarist in his most kindly message to **The Apis Club** and THE BEE WORLD, has shown perhaps a greater appreciation of this aim than any other leading apiarist who has been good enough to encourage us, and this infant magazine has already found distinguished and enthusiastic readers in both hemispheres. It stands for the advancement of bee culture, for augmenting the ranks of progressive beekeepers, for furthering the exchange of knowledge, within its sphere, between the different communities of apiarists, for fraternal co-operation, and more especially for the encouragement of research work on which alone, it believes, steady progress can find a solid foundation.

Seven months have flitted since its inauguration and its friends increase and the weight of its moral support grows daily. So far as British beekeepers are concerned, to whom its founder owes much, they have, we regret to say, not sufficiently risen to the occasion; but this is no excuse for ingratitude on our part, although our disinterested service has been finally rewarded generally speaking by ingratitude on the part of the minority and by the "benevolent opposition" of the majority, with the exception of decent sympathisers from both sections. The credit for this gigantic and amazing opposition belongs to the skilful misrepresentations of a band of opportunists and partisans who are far more interested in party duels and personalities than in the science and practice of bee culture, and hate therefore to find the clear voice of the latter loudly heard.

Almost overwhelmed by endless clerical work and worry, let alone indifferent health, we have no reason to be ashamed of our past record. The pages of this magazine speak for the research and literary work that has been accomplished in a very short time and of other services rendered in conformity with the principles of **The Apis Club.**

Undaunted by the difficulties of a superhuman struggle through which we have lost the support of the narrow-minded and the opportunists, we are still slaving for our ideal until organised beekeepers in the United Kingdom before international apiarists abroad feel that they are expected to rise to the occasion and hold a convention for the support of a public institute and a magazine labouring for the advancement of the Craft.

We have no party cry to raise in order to secure support. Our appeal is extended to progressive beekeepers everywhere, and to those who wish to be progressive. Co-operation during our period of trial is nobler in motive and greater in help than remote assistance which does not exceed lip service, and we are certainly indebted to those genial apiarists who are rushing to our assistance at a critical time. To these good friends we repeat the assurance that we shall not forsake our task so long as we possess an ounce of energy It is a gratifying consolation to be further aided by the Associate editorship of our friend Mr. J. Herrod-Hempsall, F.E.S., as has been undertaken before by our good friends the Rev. Beveridge, Miss Betts, and Messrs. Harwood and Whyte. Other well-wishers, Messrs. Gilbert Barratt, F. M. Claridge, Julian E. Lockwood, Robert Manley and Joseph Price have most kindly undertaken to help in connection with the secretarial work of **The Apis Club**, and are doing much valuable service in the exposition of its aims and activities.

The passing of a year of trial, we ardently hope, will usher us into one of prosperity—born of tenacious sincerity and genuine co-operation by the whole Craft to whom we extend every good wish in re-affirming our allegiance.

THE FERTILISATION OF DRONE EGGS.

A communication of the highest importance from the pen of Mr. Gilbert Barratt, of the **Sheffield B.K.S.**, and an active member of **The Apis Club**, on the subject of the artificial fertilisation of drone eggs, in relation to selective queen breeding, appears on another page of this number.

We have the greatest pleasure in congratulating Mr. Barratt on his accomplishment. His work should merit the attention of progressive queen breeders, considering that he has repeatedly confirmed his results, the significance of which cannot be overestimated.

Aside from its scientific and practical value his work affords an illustration of the truthfulness of the following principles, which should be popularised by those who are sincerely working for a forward movement:

(1) No authority is infallible and no modest beekeeper is necessarily fallible; therefore, with every respect to our great teachers, their views and experiments must be gauged in the light of modern experience and better knowledge, and not in the light of their shining names.

(2) It is an act of decency and self respect for any worker to acknowledge the good work of others and the source of his inspiration. The prevalent camouflaged plagiarism is a degradation to its supporters whether by action or silence.

(3) Not until beekeepers are taught to study for themselves once they have completed their preliminary study, not until more original literature makes its appearance, and not until the spirit of moral courage is better fostered, can we hope for the complete breakdown of the system of orthodox imitation, the goodness in which is greatly outweighed by its production of machines, instead of thinking beekeepers who will not fear to tackle unsolved problems.

BEE DISEASES LEGISLATION IN GREAT BRITAIN.

The Council of the **B.B.K.A.** have often been accused of dictatorial habits. Yet now that they have encouraged unfettered discussion on the subject of bee diseases legislation, their democratic attitude is not appreciated.

Mr. John Hewitt would not believe it, but we are neither voluntary nor conscript supporters of the Council of any Association, nor are we by any means the admirers of a system of "in-breeding" in the election of their executives which robs the officials of enthusiasm in their work. The secretaries of associations are perhaps the only officials who are entitled to permanency, in view of the character of their services; but as for other officials, the principle of "fresh blood" should certainly be introduced, and past officials should not be entitled to re-election more than once or twice. Their personal record of public work and ability should be their only qualifications for candidature to the Council Membership.

In spite of this defect, in which almost all the executives of our Associations share, the Council of the **B.B.K.A.** have certainly not failed to show their adaptation to the spirit of the time, at least in relation to the important question of bee diseases legislation. Had they decided on a definite policy, many narrow-minded members who call themselves "loyal" (a different thing to our mind from "sincere") we are assured, would have blindly supported that policy through thick and thin. By avoiding this course the Council of the **B.B.K.A.** have decidedly introduced therefore an admirable precedent of far-reaching educational value. We confess that it never occurred to us before that such a type of hopeless partisanship can still survive, although we have good reasons for complaining from the prevalence of other forms.

Since the appearance of our notes on this subject in the November number, much discussion has already taken place in the **B.B.J.** and is still at its height. We trust it may be further augmented by discussion in the rest of the Home Bee Press, as we cannot have too much constructive criticism on this important question, and it is essential that all shades of opinion—with the exception of the dogmatic and destructive criticism of the selfish beekeeper—should receive decent facilities for expression.

There are indications also of a move in the right direction—at least we hope so—on the part of the Government who are likely to consult the whole Craft in this Country on this subject before the introduction of any measure. Under the circumstances we prefer to await the proposals of the Government before offering any criticism, other than some constructive suggestions in our next issue. We strongly support the principle of legislation, but most certainly we shall not favour a destructive measure. In this connection we may mention that it would be instructive for our readers to study also the 1913 Bee Diseases Bill, although it does not represent much difference from 1912 Bill. Both are obtainable from H.M. Stationery Office.

THE IDEAL BROOD COMB.

It seems to us that the Ideal Comb for the Brood Chamber is **(a)** one which in measurements is adaptable for both section and extracted honey production, as well as suited for the winter habits of bees; and for these reasons **the large deep frame** commends itself, much as we admit that greater control on the part of the apiarist (in the shape of gauging the requisite capacity of the brood chamber in proportion to the supers, when working for section or heather honey) will be needed, but the trouble will not compare with his gain in having a better winter larder than available at present; and **(b)** an artificial comb possessing practically all the advantages of the wax comb without its defects, the convenient argument by some writers that bees "prefer" wax comb to a **complete** artificial comb may be dismissed at once, and on grounds of experience, as totally inaccurate.

We have recorded our appreciation of the MacDonald Metal Comb, which has so far been the only artificial comb on the market, and have also referred to the principles advanced by the editor of this magazine on this subject, and which have been applied in the production of the different types of his artificial comb.

In lightness, the ribbon pattern of metal comb cannot be surpassed. The original use of ribbon metal for the evolution of an artificial comb was due to the ingenuity of the celebrated Moses Quinby in 1870. Unfortunately he was as staunch a champion as Langstroth, A. I. Root, and many others of "wax-baiting" and "wax-insulating," otherwise his research work would have borne better fruit. In fact, were it not that George MacDonald has limited his "wax-baiting" to a surface touch of his comb, the Beekeeping World would not have benefited by his invention, as he would have been baffled by the cost of production.

It is not that we do not appreciate the keen sense of smell in the honey bee that prompts us to expose the absurdity of the "wax-bait" theory, so much fostered by wax-foundation manufacturers, for in fact we have always shown full appreciation of this endowment in the bee (*). But we base our views on actual experiments, and on a truer appreciation of the quality of instinct which she possesses. With a practically non-odorous metal such as aluminium and in the absence of tempting circumstances for decamping, we fail to see that aluminium foundation or aluminium comb will not be as welcome to our bees as the corresponding wax articles. The factors that lead to contentment or decamping on the part of a swarm, which is too conscious of the personality of its queen, do not appear to us to have anything to do with the wax aroma. The influence of the queen in this sphere, most likely accidental, appears to have been unjustifiably ignored by our writers.

The experiments and observations which have led to the disproval of the "wax-bait" theory have also exposed other facts of significant importance, not least amongst which is the evolution of grooved foundation, as a practical appreciation of the keen sense of touch of the bee. Not only so, but it is appreciated as a result, even by those who believe that the activities of our insect are nothing more than "actions and reactions," that any reasonable instrument of guidance whether as raised, beaded, or grooved lines will guide the bee in her wax building. Several types of artificial foundation can therefore be produced quite economically. What a contrast with the past when artificial mid-ribs were the best endeavour; and considering they were amazingly based on wrong data by brilliant men, they soon proved a hopeless failure! No one will totally condemn the artificial foundation, when we can claim for it more than a dozen proven advantages, other than the biassed person, whether big or small...... But as history repeats itself, we can calmly await their future assurance that they are foremost in its championship!

Being part and parcel of our metal comb in all its types, the metal foundation demands the above reference, and we take the opportunity to record our appreciation of the generous exposition of our work (in relation to the scientific development of hive equipment) by our esteemed contemporaries **L'Apicoltore, Bee Craft, and The British Bee Journal.**

1919 will be remembered in this Country by the appearance of the artificial combs and foundations. We originally introduced here and tested the MacDonald comb; and, purely on scientific grounds, have done our utmost to give it the publicity it deserves. If we venture to claim that even our ribbon comb which is fully hygienic, reparable, more serviceable, durable, and more resistant than the MacDonald comb, presents a decided advancement in artificial comb production, we do so without any sense of vanity or disrespect to the brilliant inventor who is one of the distinguished members of **The Apis Club** and who has calmly resisted the cruel opposition of a powerful section of the Bee Appliance Trade—only to emerge from his struggle triumphantly. George MacDonald is good enough to remark in appreciation of our disinterested support, as well as of our frank unbiassed criticism of his invention: "I like you for the reason you are not afraid to say what you think and you are progressive."

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* THE BEE WORLD, September, 1919, p. 66.

THE ROOM APIARY. The question of **early** supplies of bees cannot be said to have been satisfactorily solved, at least in proportion to the demand. Mr. C. B. Bartlett, of Witney, our readers will remember, outlined a re-stocking scheme (to which full review was given in our June number) which is certainly sound in so far as **early breeding** is concerned. He told us that by breeding in the Scillies, where the climate is pre-eminently suitable, nuclei for re-stocking could be produced two months earlier than in Oxfordshire. The alternative is what Mr. Richard Whyte advocates, namely the importation of good foreign stocks in the autumn, their careful wintering, and their distribution early in the spring. The risks of the latter course are obvious. The former plan has much in its favour for securing early supplies of bees which may or may not be utilised later for the introduction of different queens of whatever selected strains desired. Another alternative is the importation of nuclei early in April from Holland, Spain, Portugal, Morocco or even from Egypt, the price of bees plus shipping and railway charges not being prohibitive. This course, however, is not devoid of risks.

The difficulties of bee supplies in the United Kingdom do not end here. Lacking expert labour, suitable apiary ground, and other facilities, many breeders have been handicapped in raising nuclei during the season. The **brood hatching chamber** came to their assistance. But as a better alternative to the active breeder, **The Incubating Room** may be confidently recommended. It is economical in many ways, correct in principle, simple in utilisation, and therefore sure in results.

Within one room a considerable number of nuclei (say, three-comb ones: one of capped brood and two of food, and with a selected queen) can be placed in their boxes over one another.

The covers of the boxes must be provided with spacing handles, so that ventilation will not be impeded. The temperature of this incubating room should be, as a maximum, one of blood heat and not less than 85° F. and the air liberally moistened by means of water evaporating from a basin placed over the heating apparatus, preferably an electric one. Careful records must be kept, so that a particular nucleus may be removed from the I. R. about a fortnight from the date of its accommodation The "**Room Apiary**" should be visited at least twice a day, in order to ensure favourable thermometric and hygrometric readings, a little mist spray of water in the room and on the boxes daily would be advantageous. It must be remembered that ultimately the bees themselves will generate an appreciable amount of heat, hence a regulated heater is much to be preferred as a safeguard against over-heating. A room provided with a fireplace (not used) and with an outlet ventilator near the ceiling (or even lacking the latter) will be sufficiently ventilated for this purpose.

SAVING THE HELPLESS BROOD. Our esteemed contributor, Mr. J. N. Kidd, has evidently missed our points of argument relative to his experimental work, most likely through the clumsiness of our explanation. To sum up impartially the net results of his work in the light of present day knowledge we frankly say:

(1) The utilisation of the chicken-brooder for raising nuclei is by no means a new one, and we claim no share of credit in its evolution.

(2) To eliminate I.W.D. is to entirely remove its source or to establish an immunity towards it. Neither one nor the other did Mr. Kidd accomplish.

(3) In the light of recent research he has rightly saved the brood of a diseased stock, but cannot reasonably advance that the hatching bees will be ultimately immune to disease, which is the only meaning for the elimination of the latter, in the wide spread presence of its source.

(4) An infected queen, being a single adult individual, may carry the infection and yet without producing a serious outbreak. The case is different when an **appreciable number** of diseased bees are united to healthy ones.

(5) The introduction of a queen over sealed brood has already been in practice with much advantage.

(6) Chicken brooders do not present an economical method for raising nuclei on a large scale, in comparison with an incubating room.

We sincerely hope, however, that research students will be more interested in this subject next season.

COMMENTS. In stimulating constructive discussions, we have endeavoured to give several examples by commenting on the articles of our able contributors, whether we happen to agree with their views or otherwise. Our aim has always been to impress on our readers that **no** writings, including our own, must be accepted as correct without careful reasoning; and that constructive criticism is an instrument of research which is priceless. Destructive criticism, on the other hand, has no value whatever. It is the consolation of the ignorant, the idler, and the biassed.

An example of valuable constructive criticism will be found in the current issue of **The Beekeepers' Gazette** on the subject of candy feeding. What a pity that more of such helpful discussions in which the editors take part are not common in the Bee Press, since an immense gain will no doubt be secured by this intelligent practice which will offend no one, except the narrow-minded, who prefer to be patted on the back rather than help in the search for FACTS.

It is our pride that we have not used our columns for the personal satisfaction of any reader, contributor, or advertiser, at the cost of sacrificing the principles of public service for which this magazine has been established. Were it not for lack of space and time, and for an earnest desire to encourage the spirit of independence and constructive criticism amongst our readers, we would willingly have extended our editorial comments, but under the present circumstances we are compelled to curtail them. May we rely on the able and open-minded co-operation of our readers?

Original Contributions.

What Makes Bees Swarm?—I.

By ANNIE D. BETTS, B.Sc.

We are so used to the manifestations of the bee's swarming instinct that perhaps we do not often pause to consider what a wonderful thing that instinct is. When bees swarm, their whole nature appears to undergo an almost miraculous change; and it may be worth while to spend a little time considering how the miracle happens, and trying to find some clue to the cause of it. Apart from the great interest that all intelligent beekeepers take in any fresh insight into bee-life, an accurate knowledge of the true immediate cause of swarming would be of considerable value, as it would probably enable us to control it to a greater extent than is at present possible.

There is no doubt that the received opinion is well founded, that bees are induced to prepare to swarm by a high temperature and by overcrowding—particularly overcrowding in the brood nest. But, as far as the writer knows, no one has yet shown how these conditions operate. It is however, plain, that there must be some mechanism, so to say, that is set in motion by high temperature and overcrowding; and, once set going, does not stop because these conditions are removed or reversed. We all know to our cost how hard it is to stop bees swarming if once they have begun their preparations. The following is an attempt to describe what the writer believes to be the nature and way of working of the aforesaid mechanism.

It is well-known that the queen, throughout her life, and the workers and drones while they are young larvæ, are fed on a special food, commonly known (generally in connection with queen rearing) as royal jelly. This consists either wholly or in part of the secretion of gland system I (Schiemenz). This pair of glands is better developed in young workers than in old ones, in whom it gradually atrophies. Now brood rearing does not begin until the hive (or at least the centre of the cluster) is at a certain high temperature (90-98° F.). It is therefore a reasonable assumption that the nurse-bees cannot make royal jelly until this temperature is attained, and will not reach their maximum output till hot weather makes its maintenance easy.

If a worker larva receives an excess of royal jelly (which is normally fed to her sparingly for three days only), she develops certain of the organs and instincts of a queen; becomes, in fact, a "fertile worker." Now suppose that a normal adult worker partakes freely of royal jelly; is it unreasonable to assume that there will be aroused in her certain female instincts which are usually dormant! As her ovaries are rudimentary, she cannot lay eggs; but there is reason to suppose (as will presently appear) that she is impelled, if a nurse-bee, to revert to the brood-rearing habits of her ancestresses; or, if a forager, to attempt a mating flight.

Assuming for the moment that this is what does happen, let us consider what occurs in a hive at the beginning of the swarming season. The weather becomes hot, food is coming in abundantly, and plenty of royal jelly is being produced. Then the brood nest becomes overcrowded, and the queen, for lack of cells, is unable to lay as many eggs as usual. The number of larvæ in the hive begins to decrease, as the older ones reach the pupal stage; and there is consequently a somewhat sudden drop in the demand for brood food, and a resulting superfluity of royal jelly. This surplus is eaten by some of the workers, mostly by nurse-bees, in whom it arouses a "memory," so to say, of the large clumsy cells, and larvæ immersed in pap, of the primitive bee (compare the bumble bee's brood rearing habits). If any foragers (bees over 12-14 days old) should partake of it, they on the other hand are impelled to leave the hive for what was originally a mating flight, and (possibly in this also "harking back" to their ancestors' habits; compare the queen bumble bee about to make a nest) roam about seeking for a new home. These are the scouts, which it has been noticed are sent out at the time the queen cells are started, as well as subsequently (**British Bee Journal**, 1910, p. 510). As soon as the queen cells are started, the surplus royal jelly is mainly used in feeding the queen larvæ; indeed, so much is soon required for this purpose that the queen's allowance has to be cut down, and she sonsequently ceases to lay. (This we know to be the case before a swarm issues). Now comes the time when two or three of the older queen cells are ready to be sealed; by this time the worker larvæ are few, because the queen has not been laying for some days; and there results another glut of royal jelly. Some of it doubtless goes to the younger queen larvæ; this may account for the occasional superiority of those queens, compared with their elder sisters. But there must be much more surplus royal jelly than can be disposed of thus. The bees in consequence have a general feast on it, and this time there is enough to allow of most of the foragers getting a share. Acting under the influence of the resulting mating flight impulse, they rush madly out of the hive, hustling the queen (who is probably willing, but not enthusiastic) along with them, and circle in the air until the force of the impulse is exhausted.

In this connection it is interesting to note that the bees of a swarm are strongly **positively heliotropic** at the time of issuing from the hive. That is to say, they are under an uncontrollable impulse to go towards the brightest light visible. This was discovered by V. L. Kellogg (**Science**, 1903, Vol. 18, pp. 693-696; see also J. Leeb, "Forced Movements, Tropisms, and Animal Conduct," p. 159). By removing the shutter from an observatory hive which was about to swarm, the bees were compelled to turn tail and rush up to the top of the hive (which was under a skylight); and the swarm was prevented from issuing by leaving the shutter off. After a time, the swarming impulse subsided, but recurred again about three hours later. (Presumably by then, the bees had eaten enough royal jelly to work them up to swarming pitch again.) That the rush out of the hive is really an attempt at a mating flight has been known for some time; and it may be noted that male and female ants, when "swarming," are in the same state of positive heliotropism as swarming bees. The same is presumably true of the queen and drones when they take their mating flight; and it is probably in order to induce this state that they are specially fed by the workers, before they fly.

After a short while the bees lose their tendency to seek the light, and the swarm clusters. It is now plain why it is not wise to attempt to hive a swarm too soon after it has issued; many of the bees will still be positively heliotropic, they will at once come out of a dark skep, and our trouble will be for nothing.

There are several facts which support this royal jelly theory of swarming. One is, that races of bees which are inveterate swarmers (Egyptian or Cyprians, for example) rear enormous numbers of queens, and are very prone to fertile workers. These facts obviously mean that the hot climate has encouraged a high development of the capacity for producing royal jelly, so that a large number of queen larvæ can be adequately fed at one time. There is moreover an ever-present chance of the swarming mechanism being set in motion, even when the brood nest is not overcrowded; and if such a stock becomes queenless, and often without this happening, there is so much superfluous royal jelly that some worker larvæ are sure to get enough of it to make them into "fertile workers."

The writer is painfully aware that the above contains a terrible amount of theorising on slender foundations of fact; also that there are some objections to the theory. It is hoped to deal with these in a subsequent article. In the meantime, the theory is submitted to the readers of THE BEE WORLD. in the hope that they will make any suggestions or criticisms that occur to them. Severe adverse criticism will be particularly helpful; for it will shew up the weak point in the scheme, and may well suggest the real solution of the problem.

Beekeeping in Portugal.

By ROCHA D'AMORIM.

[Translated by G. B. MITCHELL.]

In remote times, beekeeping in Portugal attained a high degree of development and prosperity. To give an idea of its great importance it is enough to study the protective measures and rules of this industry, engraved in legal diplomas promulgated during the reigns of the earliest Kings.

During many centuries it flourished, until the progressive culture of land beginning to invade the vast uncultivated tracts, which until then had been almost exclusively covered with an extremely rich honey-bearing flora, began to make it enter into a phase of decline, which became more accentuated after the discovery of cane sugar.

From those times until now, it has been greatly neglected, and even now there has been no sensible improvement. Really beekeeping, to-day, amongst the majority of Portuguese beekeepers is exactly in the same state as it has always been, since early times when Portugal became a nation.

The hive used to-day, is the same as then and is most primitive.

It is cut from the bark of the cork tree, which grows everywhere in Portugal.

A tree is found with a straight trunk and of a convenient diameter, the bark is stripped when it is 3 to 4 centimetres thick, and a cylinder is thus obtained which is cut into lengths of about 0.50 m. One end is covered with a round of the same cork and the hive is made. Before introducing the bees to this primitive habitation, sticks are placed across the interior at three different heights. These bars secure and fix the comb to the walls of the hive, and the rudeness of this construction corresponds to the methods of keeping and multiplying the great active population which has to inhabit it.

As soon as a swarm is placed in the hive, it is put on a board, a stone or even directly on the earth, covered with a little straw or an old basin, and the poor insects are then left to their fate.

In general, no more care is taken of them until they prepare to swarm, which generally takes place the following Spring.

Then in a first visit made at the beginning of the honey flow, they cut off the ends of the combs, which having been covered by the bees during the winter, are mildewed or in some other way damaged. A short time after, the bees will have reconstructed the combs, and the hive will be completely full of honey and brood.

In the majority of the hives this happens about the second week of the harvest, or even earlier, for the hive is so small, that very few days of intensive work are necessary to completely fill it.

When it has reached this point, many beekeepers do nothing further than watch the hives to see the swarms issue, and to place them in other empty hives; others, however, more impatient or unable to exercise so much vigilance for some days, make forced swarms. To do this they invert the cork, and place on the top another empty one, and then beat on the full one with a stick or stone.

As soon as about two-thirds of the bees have ascended into the empty hive, accompanied by the queen, the swarm is ready in its new habitation, which is generally placed in some distant spot.

For the greatest part of the beekeepers, this is the end of the work, and of the care which they take of their poor bees during the whole year round. But others, after the swarming, proceed in other ways; because some make it their business to sell stocks, and others honey and wax.

Those who sell stocks, revisit them after the swarming when purchasers appear, which is generally the case about Xmas time. They generally sell about half the stocks they possess, thus remaining with about the same number which they had at the beginning of Spring.

Those who sell honey and wax, go about the process of taking these products twenty-one days after the swarm has issued, naturally or forced, if they wish to take all the honey and wax which the hive contains. To do this, they repeat the operation described above, driving all the bees into an empty hive; and as during the twenty-one days, all the brood has hatched, there remains in the hive only the honey and wax.

The bees which have been driven from the hive nearly always die, because the passage is always made towards the close of the honey flow, and generally they have not time to store enough for the winter. Some beekeepers to save them, transport them to localities where the harvest is later, and when they do this, they nearly always succeed in their intention.

If they do not wish to take all the honey and wax, they proceed in another way which is usual in some localities. Some time after the harvest, about the end of June, they go to the heaviest hives, and with a special knife they cut away the combs to the depth of about 10 centimetres more or less. After taking away this part which generally only contains honey, they fix the top on again and replace the hive.

The honey is squeezed from the combs by hand, or by the aid of very primitive presses.

The quantity extracted from each hive averages about three litres, owing to the small dimensions of these hives, which are approximately about 0.50 m. high by 0.30 m. in diameter.

Proportionately the amount of wax obtained is greater and even so, it is not enough for the consumption. The principal use is in religious acts of the Roman Catholic Church.

With the careless and rudimentary treatment with which are treated the colonies of these fixed hives, it is not to be wondered at that during the year a great number of them succumb. It is only to be wondered at that they do not all die, and still there are all over the country many thousands; and nearly every village has some.

How shall we explain this resistance to so much neglect on the part of the beekeepers?

By the good conditions of their surroundings!

Owing to the mildness of the climate, the problem of hibernation, so difficult to resolve in other Countries, so to speak, does not exist in Portugal. All that the bees require to pass the winter well, is a sufficient quantity of provisions and this quantity never reaches the high figure necessary in northern Countries. It is not that our bees are more frugal, but simply that the period of rest and inaction is much less. In many localities even in November and December, they are still occupied in gathering in the autumn harvest and already in January they begin to gather some pollen and nectar which from then onward increases until the epoch of the great honey harvest, which in many parts begins in April. In this Country it is more difficult for the bees to pass the summer than the winter. Of all the months of the year, the most critical is August, not only because then there is nothing to gather in, but because with the great heat, the moth is very troublesome.

Besides the mildness of the climate, other circumstances contribute to the prosperity of beekeeping; but I will only cite the extraordinary richness of the honey flora, of many regions and the absence of infectious diseases which hitherto are unknown here.

There is little to be said about the enemies of the bees, but the most important are the moth, ants and swallows; but their ill-doings do not amount to much altogether.

In face of these facts, it is easily explained how the bees triumphantly resist the barbarous treatment they receive.

But this being explained, another arises to excite the curiosity of the reader. How is it that with such favourable conditions, modern beekeeping with movable frames has not yet obtained, amongst the Portuguese, a higher degree of development and splendour?

This is what I shall explain in my next contribution if I am permitted.

[We shall be most happy to publish further contributions from Dr. d'Amorim. Such notes as he has kindly sent us, through the courtesy of Mrs. Mitchell, are of international interest, especially coming from the apicultural editor of the only agricultural paper published in Portugal, **A Gazeta das Aldeias**, "The Village Gazette."—Ed.]

Eliminating the "Isle of Wight" Bee Disease by Independent Brood Incubation.

By J. N. KIDD,

Hon. Superintendent of the Durham County Council Apiary.

Does the chicken-brooder plan completely eliminate the "Isle of Wight" disease from a stock of bees? We shall get the answer next season, I hope, from many experimenters; and if it is in the affirmative, this chicken-brooder plan is the "Victory" idea. Could anything be more simple? I feel that nothing more is needed but to let the practical beekeepers see the photo and the explanatory note and leave the rest to them.

It will, however, be helpful to explain how the plan has been evolved.

Having picked up a suggestion that Isle of Wight was a disease that affected the adult bees only and not the brood, I brought out a scheme for the elimination of disease by transfer of flying bees as follows:—

Each strong stock must be swarmed in June; the swarm to be hived on the old stand. On the eighth day after the swarming, divide the stock into two equal portions (Nos. 2 and 3). I theorised that if there was undeveloped disease the last removed, No. 3, might survive as very few old bees would be left in No. 3.

The scheme was not convincing. I was afraid that the few old bees remaining in No. 3 might have got the Isle of Wight infection or that many of the young bees having had contact with the main body might have been infected.

At this stage Dr. Abushâdy was giving the **B.B.J.** readers many suggestions on artificial heating and explaining his idea of a brood-hatching chamber. My difficulty at once was gone. I would shake all the bees off the combs in No. 3 and give the bees to No. 2. I would then hatch the bee-less brood of No. 3 (and a queen cell) by artificial heat in a chicken-brooder. Thus, I would get a colony of bees that had never been in contact with diseased bees. It was a desperate manipulation conceived in a desperate mood.

In my leisure time, I visit and assist quite a circle of local beekeepers. There has been no end of the "Isle of Wight" disease for many years. Our practice has been to burn the bees and the contents of the hives. We have re-stocked over and over again with swarms from Tipperary. It is no uncommon thing to see a post girl deliver a swarm of bees in June with the morning's letters. It is a cruel practice to bring the Irish bees here to die out in a year or two. I hope Dutch bees will have better luck.

The scheme, with modifications, was soon in operation at one of my neighbours, Miss Brown, who, besides keeping a hive of bees, runs a poultry farm. I hived a swarm from this hive in May upon the old stand, and on the eighth day, divided the stock into two equal parts. At the end of June, the swarm was storing in two supers and Nos. "2" and "3" had each filled fourteen sections. As luck would have it, I.W.D. broke out in July in the swarm and in No. 2. The latter has since died.

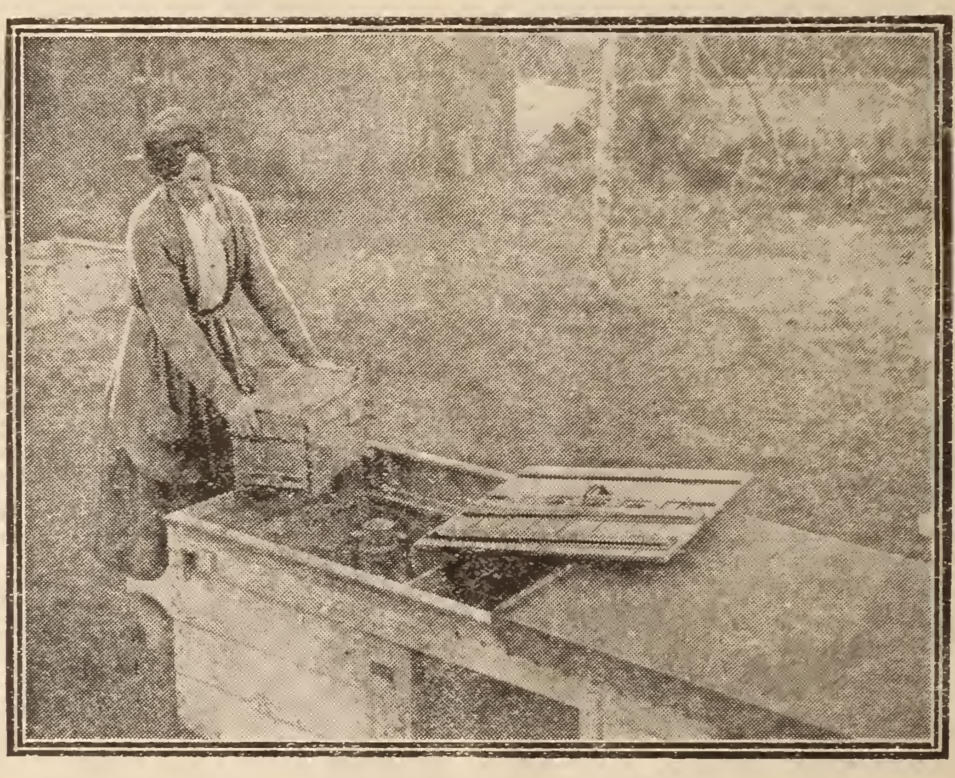
It was finally decided to put the swarm (No. 1) to the test of the chicken-brooder plan.

On September 5th, six of the combs containing patches of brood mostly sealed, were transferred to a ventilated nucleus hive made the right size to get into the brooder. The bees had all been shaken off (and were afterwards destroyed) but the queen was put in a matchbox and run on to the combs of brood at the moment the experiment was started; she was alone and left to take her chance, but she could not get out of the hive as the entrance was guarded by perforated zinc.

Miss Brown looked after the temperature, which was regulated to give 90° F., but when the sun was up it was occasionally 100° F. At the end of seven days the hive was buzzing with a crowd of very lively bees: they appeared to enjoy immensely the unusual warmth: and the queen was in their midst, quite O.K. They took their first flight with great zest.

I have shewn that it was not originally my intention to hatch by artificial heat anything but sealed brood. When the experiment was carried out the effect of the continual warmth was very gratifying to me. How far the young bees just newly hatched can be relied upon in such circumstances to take care of the young brood, I am not able to say with any certainty; but as they do not need to devote to the brood the warmth of their bodies, their capacity in caring for the unsealed brood must be very much increased.

In a single season, if beekeepers will join in this get-knowledge-quick experiment we shall be able to answer the following very important questions:—(a) Are the adult bees only infected by "Isle of Wight" and the brood is not? (b) Do combs, honey, pollen and the queen of Isle of Wight diseased stocks carry infection if transferred to healthy stocks?



[*The Illustrated Chronicle.*]

Fig. 39.

A new use for the Chicken Brooder. A successful original experiment was carried out in September at Stocksfield, Northumberland, in the elimination of the "Isle of Wight" disease from a badly diseased stock of bees. The bees were all shaken off their combs and destroyed, except the queen: and the combs containing the unhatched brood (and the queen) were put into a Chicken Brooder with a continuous temperature of 90 degrees. At the end of a week the hive was lifted out as shewn in the photograph, and it was found to be filled with newly hatched bees and the old queen alive and in good trim. Thus the new generation of bees has never had contact with diseased bees.—J.N.K.

If anyone doubts the successful outcome of this method of treating Isle of Wight, I advise him to read Dr. Rennie's reports, if he has not already done so.

I will now quote No. 3 of Mr. G. F. White's conclusions on Nosema disease. "Adult workers, drones and queens are susceptible to infection, but the brood is not," also No. 16: "Hives which have housed infected colonies need not be disinfected and combs from such colonies are not a likely means for the transmission of the disease."

To be acting in accord with Mr. White's views, I should have eliminated the old queen. The saving of the queen I owe to Dr. Rennie, who has grounds for suggesting that the queen of a diseased Isle of Wight stock does not carry infection when transferred to a healthy stock. Dr. Rennie agrees with Mr. White that Nosema does infect queens and very much so too, but he has made it difficult for me to believe that Nosema disease is Isle of Wight. His facts look like "Chiels that winna ding."

However, the chicken-brooder experiments next year will settle many things that are not now quite clear. If it is wrong to retain the old queen, it will be easy to give a new queen and thus get exactly in line with Mr. White. I will continue to retain the old queens until I get convincing reasons to the contrary.

Apart from the question of Isle of Wight, I would like to say a word about artificial heat for bees.

As the old queen was O.K. at the end of the first seven days, does not that suggest a safe method of introducing, e.g., an Italian queen to a Dutch nucleus? Regarding the sale of bees from diseased areas and the re-stocking schemes, would a nucleus that had been made by the chicken-brooder plan be accepted as a guarantee of freedom from Isle of Wight? (We shall soon be able to say Yes or No to that very important question).

Owing to the lateness of the season when the experiment was begun (September) the resultant number of bees was not considered adequate for safe wintering. Therefore the artificial heat was continued (at 80° F.) for several weeks. On fine days the little hive was lifted outside the brooder for a few hours and the bees permitted to have flight. They displayed considerable activity on these occasions, working principally on Michaelmas Daisies. When the lamp was finally put out (on October 5th) two of the combs had each a patch of new brood as big as the palm of my hand. This has shewn to me the commercial value of Dr. Abushâdy's views on artificial heating. I intend therefore to use the chicken-brooder to help weak colonies in the spring and in the autumn too. With a chicken-brooder handy there should be no chilled brood in making nuclei.

The combs, the new generation of bees and the queen were transferred back on October 5th to the W.B.C. hive which they occupied before the experiment was begun. The W.B.C. hive was not cleaned out; no disinfectants have ever been used in any way whatever. I leave to others to shew the value of disinfectants in similar experiments next year.

The stock is alive and well to-day. If they winter and thrive next season, what then? Will one swallow make a summer? Per contra, if the stock dies, will that decide the question? I think there is a wind whispering in the sails, and I can see prosperity back again for English beekeeping.

The Honey Extractor.

By W. H. SIMMS,

Member of the Council of the British Beekeepers' Association, Patent Record Editor, "The Beekeepers' Record."

It may interest many, and will undoubtedly interest the competitors for the prizes which, as stated in the September number of THE BEE WORLD, are being given for the best article embodying suggestions for improving the popular forms of hand-used honey extractors, to know what Patents have been granted in England for Honey Extractors.

W. H. SIMMS, Esq.

Whilst in the United States, numerous Patents have been granted for honey extractors, there are but eight in Great Britain from 1860 to the present time. Four of these are in respect of the honey extractors shown in the illustrations.

The first honey extractor known and used in England was imported from America and known as the "Murphy Slinger." The earliest numbers of **The British Bee Journal** contain numerous references to this machine.

The first practical honey extractor for which a Patent was granted here was in 1888 and the inventor was Mr. W. P. Meadows of Syston, who is very fittingly the judge in the above-mentioned competition. This extractor, according to the illustration, Fig. 40, was underdriven by speed increasing gear, comprising cord and pulley drive (a) operated by a hand wheel (**b**) located at the side although the specification also includes description and drawings of machines driven without gearing by means of a centrally arranged handle at the top.

The next Patent of interest is one granted to Mr. A. R. Seaman of West Virginia, in 1890. This, as shown in Fig. 2, consists of a tray (a) suspended from an arm on a sway pole (b) that extends from the floor to the ceiling. The uncapped comb was laid on a grid in the tray (a) and the pole (b) rotated by hand, whereupon the tray swings outwardly and the honey is thrown out of the comb. From the drawing, the apparatus does not appear convenient or safe, the purpose of this article is not however to criticise.

In 1903, the honey extractor shown in Figs. 3 and 4 was the subject matter of a Patent granted to Mr. A. Bullmer of Bavaria. The main feature of the invention was the avoidance of a central spindle and for this purpose the cage (a) which, as shown in the plan view Fig. 4 is adapted to take three combs, is supported by a central pivot (**b**) at the bottom and by a short stud (**c**) at the top.

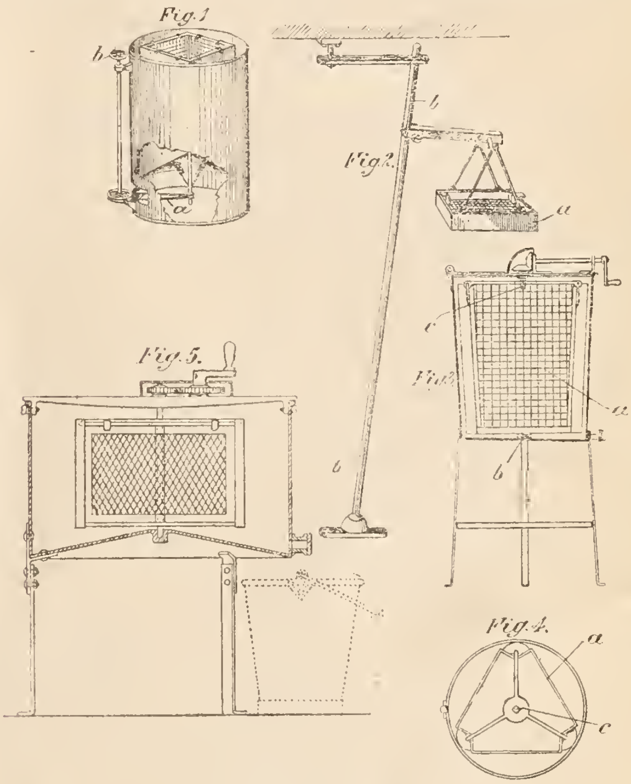


Illustration Fig. 40.

Fig. 5 illustrates an extractor in which the combs are placed in the machine broadwise as they hang in the hive. This was patented in 1906 by Messrs. E. L. and H. C. Jones, of Andover.

The four Patents referred to are typical of the whole until we reach the last extractor, for which a Patent was granted, a description of which appeared in **The Beekeepers' Record** for July, 1918. In this extractor the frames are placed in the machine with the midrib horizontal, on a horizontally rotating tray, so that after uncapping, honey can be extracted it is said, from both sides of the frame at once.

The Scottish Beekeepers' Association.

By the Rev. J. BEVERIDGE, B.D., E.B : S.B.A.

The history of beekeeping in Scotland differs greatly from that of England. This is probably in great measure due to the fact that a larger proportion of Scots than of the English have been beekeepers. In any case beekeeping in Scotland has been engaged in by all classes of the community. Whilst gentlemen and scholars contributed their share to the advancement of knowledge and improvements in practical beekeeping, yet many of the most valuable contributions have come from the pens and the gardens of the peasant class. As far back as 250 years ago the Records of the Royal Society tell us that the humane or non-swarming system of keeping bees "was used with success in Scotland." And John Geddie, of Falkland in Fife, obtained a patent from Charles II for a hive that was an observation and tiering hive in one. He wrote an admirable treatise on the management of bees, that ran through several editions, ours being the third edition, enlarged, and dated 1677. James Bonner, Beemaster, issued a volume in 1795, indicating how the number of hives in the country could be indefinitely increased. The book was dedicated to the Highland Society of Scotland, which has always shown a kindly interest in bee culture. Bonner himself is said to have kept his bees in a garret.

Just a century ago, Robert Kerr, an Ayrshire cabinet maker, improved and simplified Geddie's octagonal tiering hive. This, the Stewarton Hive, revolutionised honey production in Scotland. At the Crystal Palace Show in 1874, the honey in Stewarton supers took England by surprise; and John Hunter, the great English authority, in his **Manual of Beekeeping,** 1875, confessed that "the cottagers of Scotland far exceed the English in the ability they display in beekeeping."

About the time of Robert Kerr, there was a peasant in Carluke in Lanarkshire, named James Pettigrew, who was widely known in Central Scotland and far beyond as the "Beeman," on account of the wonderful knowledge of bees and their ways that he possessed, and of the surprising returns he obtained from his hives, even in years when others harvested little honey or none. A son of his in 1870 issued **The Handy Book of Bees,** a practical treatise on their profitable management. He proved conclusively the necessity for large hives, if one desired bumper crops of honey. The results he gave, from his father's experience and his own, showed that in those days with comparatively primitive appliances, large straw hives, and intelligent handling, the native brown bee could produce such quantities of the finest comb honey as are seldom obtained in the standard hive of to-day even by the most intelligent beekeepers. Sixty years ago, William Thomson of Blantyre ("The Lanarkshire Beekeeper") claimed to be the original introducer into Scotland of comb foundation, and in 1862 he had embossing plates made and was ready to supply the British market, before the first German plates had reached this country. He gained the prize offered by the Highland and Agricultural Society of Scotland for an Essay on Bee Culture, which was a wonderful and worthy production for a man in his position in life. The name was altered to **An Essay on Bees** when it was published in Glasgow in 1882.

The last half century produced a large number of interested and progressive beekeepers in all ranks of life. They have done much to introduce improvements in appliances and to popularise the industry. Many of them have already passed away; and it would be a great advantage if a series of sketches of these worthy beemasters could be obtained, whilst still the memory of the men and their work survives. But those who do survive felt more and more the necessity for the starting of a Scottish Beekeepers' Association to do the utmost possible for the industry and the beekeepers and the country.

In the year 1874 representatives of local beekeeping societies, some of which had been in existence for upwards of a century, met in Glasgow and resolved to form "The Caledonian Apiarian and Entomological Society," Mr. R. J. Bennett, Glasgow, being the first Hon. Sec. In the following year the society had an Exhibition in conjunction with the West of Scotland Horticultural Society. In 1876, an Exhibition was held on the occasion of the meeting of the British Association at Glasgow. In 1877, the Exhibition was held in Edinburgh under the banner of the Highland and Agricultural Society; and since then the Exhibitions have taken place wherever that Society had its Annual Show, and there the beekeeping fraternity used to meet and devise.

The Caledonian Apiarian and Entomological Society, however, having served its day and generation, was in 1912 succeeded by the Scottish Beekeepers' Association, which resolved to confine its energies and operations, as the name implies, to promote in every way the art and practice of beekeeping in Scotland! The first Hon. Sec. was Mr. G. W. Avery, Bee Lecturer at the Edinborough Agricultural College, and thereafter Messrs. A. A. Blair, J. L. Gibson, Charles Meal, and Henry Crombie, M.A., have held the office. Under the able guidance of these gentlemen, and a worthy succession of Presidents elected annually from different districts of the Country, the association has progressed far beyond expectations. In 1914, an effort was commenced to link up all existing beekeeping associations in Scotland, and, had not the war intervened the results would have been still more gratifying than they are. Almost every part of Scotland is now represented on the S.B.A. either by Associations or Associates; and the good work accomplished has been recognised by an annual grant from the Scottish Board of Agriculture of £100 towards carrying out the objects of the association.

The S.B.A. possesses a very valuable library of beekeeping literature, presented to it by J. W. Moir, Esq., Edinburgh, a former President and the present Hon. Treasurer of the Association The catalogue contains upwards of 400 different volumes, and these are placed freely at the service of the members. The S.B.A. has a list of voluntary speakers ready to deliver lectures on beekeeping and to assist in the starting of Associations in any part of the country; and its excellent sets of Lantern slides are available, without any charge whatever, for the use of any of the Association branches or members In order to raise the general standard of apiculture, the S.B.A. has organised an Examination Scheme and issues certificates in Practical Beekeeping :**The Beemaster** certificate (B.: S.B.A.) and **The Expert Beemaster** certificate (E.B.: S.B.A.) In the first year sixty candidates from many parts of the country qualified as Beemasters and twenty-five as Experts; and of these 13 were ladies.

The Board of Agriculture for Scotland, as we have seen, has in a very practical way encouraged the Scottish Beekeepers' Association, and its Chairman, Sir R. P. Wright, LL.D., is one of the S.B.A. Hon. Vice-Presidents. In conjunction with the Board of Agriculture the S.B.A. is undertaking the compiling of a census of beekeepers and bee hives in Scotland. It also seeks in every possible way to co-operate with the three Scottish Agricultural Colleges, each of which now has two lecturers in beekeeping, and re-stocking apiaries and schemes in full operation. For the courses of lectures of these lecturers the local branches of the S.B.A. in many districts make all the arrangements and seek to make the courses as successful and profitable as possible. As indicating the friendly relationship between the S.B.A. and the College lecturers it may be mentioned that this year the Association has chosen for its President John Anderson, Esq., M.A., B.Sc., E.B : S.B.A., of the Aberdeen College, who is so well-known in many lands by his interesting articles in the Bee Journals, and by his valuable researches into the causes, consequences and cures of bee diseases.

The S.B.A. also publishes bulletins and leaflets on beekeeping questions of moment and distributes these by the thousand; and there are many who look upon this as one of the most valuable services rendered by the Association. It has also appointed contractors who supply the members with bee goods and appliances at wholesale prices; and its market committee fixes the price of honey from time to time, and has appointed depots where the surplus honey of members may be disposed of at not less than the price so fixed. The Association, however, has no financial or other interest whatever, in the appointing of these contractors and depots, beyond the benefit of the branches and the members.

The Annual Exhibition is still held in connection with the Highland and Agricultural Show, which visits the important districts of the country in rotation. The only disadvantage of this connection is that the Show is held rather early in July for Scottish beekeepers to have a good honey exhibition, unless the season happens to be a particularly early one. But there is a great advantage in having an Exhibition annually, even if often the honey show is comparatively poor, especially if it is held in different parts of the country; for thus every ten years at least, there is the opportunity for every beekeeper to see for himself how his appliances and produce compare with others from the rest of the country. And the Conference held in connection with these gatherings brings together those who have the interests of the industry specially laid on them, and who in time become acquainted with the conditions and the needs of every district. And such friendly meetings of those who have this common interest, many of whom, however, from distance or circumstances cannot take the active part in counsel and administration that they would like, are of immense value in the exchange of experiences and the forming of friendships, and in bringing it about that beekeepers in Scotland, at any rate, are among the most genial, brotherly and hospitable of men. The Scottish Beekeepers' Association has fostered this tendency, as all who have been brought into touch with them gladly acknowledge. In Scotland we have our own problems and many of us have plans and methods of our own; but Scottish Beekeepers are liberal minded and ready to examine any new appliance or practice, and, on due consideration, to adopt it, if it seems an improvement. And with an open mind all the problems that arise will be courageously faced in the future as in the past by the S.B.A.

The Present State of Beekeeping in Italy.

By A. ZANINI, general manager of E. Bozzalla's Queen Rearing Apiaries, Crevacuore, Italy.

The disorganisation of most industries caused by the Great War has unfortunately affected Apiculture as well. Whilst in France and martyred little Belgium that which was not directly destroyed was stolen, in Italy skeps and fixed comb box hives were consigned by the thousand to the Sulphur Pit by the honey profiteers and hoarders, whose energy increased in direct proportion to the price of the only substitute for sugar. The sugar ration was less than half a pound per person per month (enough to sweeten slightly one cup of coffee per day !) during the war. Little wonder then that the bee murderer set to work with renewed zeal. Skep apiaries which before the war comprised several hundred stocks are to-day reduced to a few colonies and in many cases have been effaced completely.

In contrast to other countries like America, France and Belgium whose governments have passed laws for the protection of beekeeping and beekeepers, in Italy apiculture is completely ignored by the government. Were it not for the few enthusiasts, it might be said, with truth, that the useful and industrious little insect is absolutely without a friend. As for the apiarist, the only person who takes an interest in him is the Surveyor of Taxes. This gentleman has heard or read something about the profits to be obtained from bees, and assesses the taxes for the apiarist accordingly. What has been written and done up to the present notwithstanding, it is the firm conviction of Italian beekeepers without exception that they must look to themselves for progress without any hope of government support either moral or material

It may seem paradoxical to say so, but it is the fact that the Italian bee, sought after and appreciated throughout the world is ignored by those entrusted with the government of " The Garden of Europe." We have, 'tis true, the State Apiaries, but they are in the hands of private individuals and are old decrepit, lifeless institutions and hence worse than useless.

The best organisation in Italy is " **La Federazione Apistica Italiana** " with headquarters in Ancona. This Association, thanks to its active and energetic management, has been able to establish an important and powerful position for itself, and is progressing and developing well under enterprising management. It promises well, although up to the present it has limited its activity to the sale of the produce of its members.

The Central Association for the Encouragement of Apiculture in Italy, after an existance of more than half a century, ceased activities last December under certain impelling circumstances which do scant honour to the Italian Government.

The demand for swarms and skeps of Italian bees principally from France and Belgium, who have to set about restocking is enormous, but the Government on the principle of locking the stable door after the horse has bolted have prohibited the export of swarms, stocks and nuclei. If the Authorities had prohibited the wholesale slaughter of bees during the war, there would be more honey available now for home consumption and bees for export to help the country re-establish itself in its former economic position in Europe. You may callously consign a poor little colony of bees to the fumes of burning sulphur without let or hindrance, but you may not export the bees to help your Allies to re-stock themselves and to help improve your country's foreign exchange. Sic !

A permit can be applied for authorising the export of a stock or a swarm, but if and when the permit is granted the time has long past for the bees to be of any use to the customer. To add to this, the railway service has degenerated to such an extent as to make safe delivery practically impossible.

There are in Italy apiaries devoted to the rearing and sale of Queen Bees second to none in the world. These establishments are conducted on sound lines both apicultural and commercial, some of which, known in all foreign countries where beekeeping is practised on modern principles, are important commercial concerns with a steadily increasing value to their proprietors and to the country. Whilst these apiaries are flourishing the same cannot be said of the country in general. What I.O.W. disease has done for Great Britain, the sulphur pit has done for Italy. It is up to all who have the interest of beekeeping at heart in Italy to do their utmost to acquire the maximum number of skeps possible this summer, save them from destruction and thus do what the Government refuses to do, i.e., prevent the country being further reduced in number of bees. Some of the more progressive apiarists have already made a start, but unless the transport conditions improve, their efforts to save the situation will have been in vain.

In regard to restocking other countries, it is not possible to guess what the Italian Government intend to do, but even should the embargo on export be removed this Spring, there will be very little to export, and for this year at any rate beekeepers in allied countries will have to content themselves by limiting their requests to queens.

It is to be hoped that in the interests of all, this deplorable state of affairs will soon improve and that beekeeping will come into its own in all the allied countries.

Research Work in Queen Rearing.

By GILBERT BARRATT.

Recent research work, consisting of experiments in drone egg fertilization, may be of interest to some readers of THE BEE WORLD, considering that they disprove the theory advanced by Simmins and Dieckel, that all eggs are fertilized, and that drone eggs are defertilized by the workers. These experiments afford therefore a final confirmation of the theory of parthenogenisis.

The almost unique nature of the bee's egg lies in the fact that the fertilizing element from the drone enters from the outside of the egg, after it is fully formed, and immediately prior to its extrusion by the queen. This makes the artificial fertilization possible, and without the aid of elaborate and costly appliances.

The writer would here mark his deep appreciation of the work of the great Cheshire, the study of whose wonderful labours made these experiments possible. †

In speaking of worker eggs, the popular term will be adhered to, and whilst most bee books speak of the marvellous manner in which the workers can raise a queen from a worker egg, the reverse is actually the case, and the miracle performed thousands of times oftener, since the queen is bound to reproduce herself each time she lays a fertile egg, and the rearing of workers from **queen** eggs the more wonderful occurrence. In the experiments here recorded, freshly laid drone eggs from a pure golden queen were secured, by placing a frame of clean drone comb in the centre of a strong stock, and here it may be stated that the use of eggs two, or three days old will always result in failure. The comb containing these eggs was cut down, and pure Punic drones, just arriving in the hive from a flight were squeezed on to a warmed glass plate. The necessity of using drones on a return from flight is shown in Cheshire's beautiful description, when the air sac being fully distended, the expulsion of the male sperm on to the glass plate is rendered a readier and more certain operation. This squeezing of the drone demands some practice before the spermataphore can be ejected. It is necessary that all these operations be conducted at a high temperature, from 95 deg. Fahr., seeing that natural fertilizing occurs at the internal temperature of the queen's body, and whilst the male sperm is possessed of a high energetic vitality, the homologous element in the egg requiring little muscular effort, will not be so full of energy, and therefore more easily chilled, which would result in the imperfect coalescence of the two germs, or not at all. Imperfect coalescence would probably result in the production of hermaphrodite bees, a freak which must have been noticed by most observant apiarists. Hewitt mentions a queen he possessed, furnished with corbiculae, and instances of workers with drone heads, workers with drone legs, and drones with stings are recorded by Cheshire.

The next operation was to touch the large end of the eggs with a camel hair pencil, previously dipped in the male sperm from the glass plate. An eyeglass, as used by watchmakers, is a most useful article in this, and many other operations in the apiary, notably in the transferring of larvae in queen rearing. The eggs were next placed in an incubating chamber, maintained at 97 deg. Fahr., a small poultry incubator answering the purpose very well ; the next day, a little royal jelly, slightly thinned with new honey was added with the hair pencil again on the third day, and on hatching, were further fed with royal jelly for two days. The transfer to artificial queen cups, in the manner familiar to all modern queen breeders was then effected, these being given to a queenless and broodless stock of bees. They were duly accepted, capped over, and resulted in perfect queens, proving that the male spermatazoon had entered the micropylar aperture of the egg, and produced fertilization.

Punic drones were used in the foregoing investigations, because,as the Punic is intensely black, and posesses other characteristics, the greater contrast would be provided.

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† Cheshire's Scientific Bee-keeping.

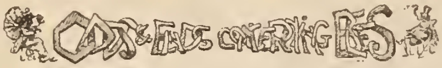
If a pure queen mis-mated, is used for drone eggs, and the sperm from a pure drone of the same breed, the resultant queens will be pure, seeing that the drone mated to the mother has no influence on her drone eggs.

To give an example, the writer possesses queens imported from U.S.A., bred from a Dr. Miller mother, but, as these queens were mated in Mississipi, the strain of the drones was not known. By using drone eggs from one of these queens (which will be pure Miller), and drone sperm from any drone selected, the pedigree of virgin queens produced will be established: similarly, if drone sperm from another first cross Miller is used, a pure bred Miller will result, although at the risk of inbreeding. The eggs of a drone laying virgin may be treated in exactly the same manner, and perfect queens will result.

The value of these investigations will be apparent, as it is seen that in breeding a strain of bees, any particular blood can be definitely introduced, a thing almost impossible previously, seeing that although we may know that a queen has mated to, say, an Italian drone, we are not sure to what particular strain,. It will be readily seen that in queen rearing, uncontrolled mating is cut down by exactly one half, as the drone egg of any given queen can be mated to any drone, and only fails in the final mating of the queens produced for the production of worker eggs in quantity.

In earlier experiments, the drones were squeezed directly on to the eggs: the results were not always certain, owing to the large amount of extraneous matter.

It is to be hoped that queen breeders in Britain, and those interested in research work will give this method an extended trial, also further investigate, using the eggs of fertile workers, and publish the results of their experiments.



ODDS & ENDS CONCERNING BEES

By R. WHYTE.

HANNEMANN—THE INVENTOR OF THE QUEEN EXCLUDER.

The inventor of the Queen Excluder was a German beekeeper, who for some twenty six years made a speciality of Apiculture in Southern Brazil. He introduced our common honey bee there, and was the originator of an unique system of beekeeping. He wrote often to the German bee papers from the years 1875 to 1879. It seems that Hannemann kept bees in a large way, having over 300 colonies in stationary hives—not frame hives— and were kept for swarming. These were what he termed his **stock capital,** and were encouraged to swarm all they could, and was what was expected from these stock hives. Young swarms he looked on as his interest, to be exchanged for honey later on.

In Hannemann's district the honey season lasted two and a half to three months, and for six weeks the secretion was so plenteous that bees would not work on honey if offered to them in the open.

Hannemann invented the queen excluder for a quite different purpose than what we use it for now. He may have been led to make his invention because of many swarms going together, when swarming at the same time, and he wanting to make sure a thing to catch all queens. In any case he constructed a sieve, so that he might sift his bees before hiving them, and so the contrivance got named **Hannemann's bee sieve.** In sifting his bees he encountered this difficulty, having his queens and drones all mixed in a heap, this led to a double sieve being used, one that restrained the drones but let the queens through, and the other letting the workers through, but keeping back the queens. The workers were hived in enormous hives, the drones killed, and the queens confined in **cages** of his own construction. These cages were made of queen excluding metal, as Hannemann wanted his queens cages so made that the bees could communicate with them freely. The unique method of his management of these swarms made it absolutely necessary to have **every** queen secured. If possible, all the swarms issuing in one day were placed in one huge hive, and Mr. Hannemann speaks particularly of one day in 1879, when he had 79 swarms issue, to be taken care of by himself with the help of his three young children, to be sifted, queens caged, bees weighed and hived. One giant hive and two barrels accommodated this enormous mass of bees. They gave at the end of the season 1,600 lbs. of honey.

At another time Mr. Hannemann speaks of his **"Giant Boss Hive,"** of 50,000 cubic inches, made in four stories, cupboard fashion, with eight hinged doors at the back, a hive that harmoniously accommodated about 120 lbs. of bees, from which he harvested at the close of his season nearly 1,000 lbs. of honey and 38 lbs. of wax. In other words each lb. of bees was exchanged for 8⅓ lbs. of honey, of the 14 caged queens, but 9 were alive when the honey was **cut** out. Mr. Hannemann in 1879 had to iake care of 700 swarms in two months. His entire crop was 15,428 lbs. of honey and 1,212 lbs. of wax. He stored his honey mostly in cemented vats or cisterns.

It is astonishing, says Mr. Hannemann in reporting this, to think, that so much honey could be produced in one locality, especially when taking into consideration that over 300 breeding colonies used large quantities for building up and for wintering on. Certainly the foregoing proves that Hannemann's location was a splendid one.

The publication, in Germany, of **Hannemann's system** created a great stir amongst beekeepers there, although it does not appear that anyone adopted it in its entirety. Modifications of the system were tried, and a Mr. H. Guehler adopted the queen cage, constructed *a la* Hannemann. He worked on this system; when the honey season is nicely begun, he confines his queens in these cages and places them on top of the brood frames with super (honey chamber) above. The bees, he says, immediately take possession of the super, provided honey is coming in.

When a queen is caged in the brood nest in an ordinary wire cloth cage, the bees behave but little differently from what they do when the queen is entirely removed. They almost always construct queen cells over larvæ, and the progress in the sections is slow, if indeed there is any. But when a queen cage of the Hannemann kind is used, so that the bees can communicate with the queen freely, they do not seem to be aware that she is restricted at all, and Mr. Guehler found things moving along in the hive normally. Queen cells were not constructed, the combs became heavier and heavier, and comb building and honey storing goes right on unless the honey flow ceases. Mr. Guehler thought it best to release the queen after about two weeks, removing a few of the heavy combs in the centre of the brood nest and inserting comb foundation, **not** drawn-out combs, in their stead. Mr. Guehler found that queens came out uninjured by confinement and proved to be just as fertile, and long lived, as though they had always had their freedom. **When the caging plan is carried to excess, say, with a confinement of four to five weeks, laying workers may make their appearance.**

After Hannemann's system was published, German appliance dealers offered these cages. They consisted merely of a wooden frame with queen excluder metal nailed on each side.

BEEKEEPING IN VARIOUS COUNTRIES.

The question has been asked "Does beekeeping diminish and become less profitable as a Country becomes more densely populated and civilisation advances?" Whether an answer can be given to this or not, it is interesting to note the number of colonies kept in the various Countries. The statistics given are such as related to the various Countries some years before the war.

Germany, 1,900,000; Spain, 1,690,000; Austria, 1,550,000; France, 950,000; Holland, 240,000; Russia, 110,000; Denmark, 90,000; Belgium, 200,000; Greece, 30,000; United States, (statistics relate to farmers only), 3,462,520 colonies. In the following table the number of colonies to the square mile is set out so far as available.

Country.	Square Mile.	Colonies per Square Mile.
Germany	208,027	9.00
Austria	115,903	13.37
Spain	200,000	8.45
France	204,000	4.65
Holland	12,648	18.09
Russia	2,950,000	1.00
Denmark	14,124	6.37
Belgium	11,373	17.49
Greece	25,000	1.20
Switzerland	15,727	1.52
Ontario	219,640	.74
Canada	—	.06

It is extremely difficult to get at the exact figures for the United States, both as regards the number of colonies and yield of honey. The same remarks apply to the United Kingdom.

SUPERSEDURE BY THE BEES.

With regard to your query, Mr. Editor, as to the effect clipping has on supersedure. I don't think the fact of a queen's wings being clipped has an atom of influence with the bees in causing them to discard a queen. The notion that it has, is because you can always tell when a clipped queen **has** been superseded, whereas when the wings are whole you can't easily tell whether a change has been made or not; of course, it is one of those things you cannot dogmatise over.

[One of the methods that we have tried with a variable measure of success in inducing bees to build **supersedure queen cells**, through injury to the queen, is by clipping **both** wings of the latter. Such clipping no doubt contributed to the weakness of the queen, and in one case out of seven, the queen was found dead shortly afterwards. The effect of the one wing clipping is more variable, since a very large number of queens will withstand it. The use of a " queen excluder dummy " for creating an atmosphere of **independence** amongst a section of the population of the hive, and so often leading to the development of good queen cells, built under the influence of such a stimulus, is a far better method. We agree with Mr. Whyte that there is no evidence (when finding a long time after clipping, that the injured queen had been superseded) to show that supersedure was the direct result of the clipping. The case is different with an immediate or an early response, although coincidence has also to be considered—Ed.]

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A Bee Farm.

By A. F. HARWOOD.

A gentleman whom I had not then met, but with whom I have since talked bee matters over to my great interest and profit, once took me to task in the **British Bee Journal** for occupying too much of the very valuable and exiguous space of that publication with my horticultural notes to the exclusion of more interesting matter directly relating to Apiculture.

There was an element of truth in my friend's objection, which was that garden flora as a source of nectar is a negligible factor, and that space devoted to the encouragement of planting garden subjects for bees is, therefore, wasted. Logically the conclusion is untenable and I am still writing bee-garden notes, but—shall I say partly in deference to his views—in a more generously framed medium.

To-day however, in pursuance of what I conceive to be the object of THE BEE WORLD I propose to make a suggestion which may seem to my friend and critic even more idle and futile than my other offence. Knowing that he stands within reach of the splash from my plunge, here goes :—Beekeeping as at present practised is a parasitic industry, a gathering where one has not sown, yes, " a gathering and disposing of other men's stuff "; often a profiting by their very misfortunes. Bee farming, i.e., the farming out of bees, is the most egregious form of this parasitism and, unfortunately, is practically the only sense in which bee farming can truly be said to exist hitherto.

Almost the only departure from this haphazard method of obtaining honey is where beekeeping is carried on in conjuncton with fruit farming and even in such cases the value of the bees to the fruit crop is placed far before that of the fruit blossom to the honey crop, nay more, a few early sections apart, the bulk of the fruit farmer's honey is obtained from non-provided sources. Nearness to lime avenues, clover meadows and heather, to say nothing of fields foul with charlock, is the determining factor in the size of the "take."

While I recognise that it is a good thing and desirable that all wholesome nectar secreted should be gathered by honey bees, that none of Nature's most excellent sweet should be lost to that biped who proudly holds himself her lord, yet methinks that a method more in keeping with the dignity and advancement of the craft of apiculture is to be sought, and found, in true bee farming, by which I mean farming for bees.

The question is not a simple but a highly complex one. Among the matters which enter into its discussion and determination is that of the position which honey is to occupy in the future.

At present, English honey is looked upon as a luxury article, that is, a high-priced one only within the reach—the producer apart—of moneyed people. Even at the present high prices of sugar, the best refined cane costs less than one third of that asked for English honey.

In other countries this ratio does not obtain and, notably in "The States" and in Italy, apiarists are aiming at production at a reasonable price in order to popularise the use of honey.

With our climate and happy-go-lucky methods it seems to me hopeless to expect any considerable increase of production or greater certainty of surplus. So long then as we adhere to these methods, honey must be regarded merely as a comparatively rare dainty instead of being, as it well might, a common article of food, as generally to be found on the table as jam or syrup and freely used in culinary operations and in domestic medicine and preserving.

The remedy for this undesirable state of affairs lies, in my opinion, in the cultivation of land with the primary object of providing large and constant supplies of nectar for the apiary.

Farmers—my friend the Critic is one, and a good one at that—will smile at the notion and say, in effect, " by — ! this is the limit in nescience and presumption ; that a mere shuttlecock, daily tossed from suburb to city and back again, a denizen of the Wen, remote from agriculture as Gehenna from Paradise, should venture to suggest a course which, if we were foolish enough to follow it, would not only melt our recent hard earned profits but bring us to the street called Carey."

Softly! my friends ; it was not always so, and fortified by recollections of an earlier existence as wide horizoned as your own I make bold to lay down the main lines of a plan for stabilising honey production on the grand scale.

The success of my plan would depend upon the farmer's knowledge of his business, and it is precisely because I do not share the opinion, so commonly held by urban critics, that British farmers do not know their business practically or scientifically, but are out-of-date practitioners of rule-of-thumb methods, that I think it worth while to propound it.

In my next article I will go into details and shall be pleased to see, appearing with it, any criticism of or comments on this preamble.

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The Press Mirror.

The New Zealand Fruit Grower.

HORIZONTAL-COMB METHOD OF QUEEN REARING.

By I. Hopkins.

It seems that in America the method of obtaining large numbers of naturally built queen cells I am about to describe is associated with my name and designated by Dr. E. F. Phillips and F. C. Pellett in their Bee Manuals as " Hopkins' Methods." I certainly never laid claim to it as being my invention, all I could claim was being the first English speaker beekeeper to test the plan and bring it to notice through the bee journals.

A wired clean comb is inserted in the selected colony for eggs in the usual way, and when fairly stocked with eggs and newly hatched larvae, remove it to a warm room, lay it flat on a bench or table and run a thin bladed knife along each side of every fourth row of cells containing eggs and larvae. The three intermediate rows are to be removed down to the mid-rib, a broad pointed bradawl is a handy tool for this work. The fourth row is left intact, but two out of every three eggs along the row are destroyed which leaves ample space for removing each queen cell separately and cleanly.

A strong two-storey colony should be prepared for cell building ......An empty half-storey is placed above, and an empty frame laid flat on the frames of the hive with the prepared comb, prepared side downward. In order to do this either the projecting ends of top bars must be sawn off or grooves cut in the half-storey to admit them. Before finally closing the hive lay a mat over the upper side of the comb. Sometimes eggs are left below the rows of cells removed ; a soft pencil brush should be run along to destroy them.

My first attempt, carried out at the Waerenga State Apiary, produced 60 fine cells, and the second experiment, at the Ruakura State Apiary, brought forth 80 cells......

Gleanings in Bee Culture.

BEEKEEPING IN THE BALKANS.

By **Francis Jager.**

Beekeeping in the Balkans is put on the same plane with horticulture and dairying. Bees are kept mostly on a large scale. The equipment is most primitive as in all Eastern Countries. A few of the more progressive men adopted the Carniolan hive, Dadant hive and the Long Idea hive.......

The Balkan bees resemble the Carniolans, except that they are slightly smaller and a brighter grey. They are exceedingly gentle, very quiet on the comb, although they follow you with their eyes. They seem to be little given to robbing. The queens are as prolific as the Carniolans and are the same colour. They have a great strength of wing to judge from the fact that the Macedonian plains during the summer drought were burnt and parched and devoid of all bee pasture, the nearest source of nectar being the surrounding mountain tops where frequent rains cause the mountain soil to bring forth the most wonderful carpet of flowers. My rough estimate of the distance from the apiary † to the pasture in the mountains is about seven miles.

The American Bee Journal.

CAGING QUEENS.

By **W. Griffiths, Silkmore, England.**

Referring to Dr. Miller's reply to " Ohio," in the August number of the American Bee Journal, " Caging Queens," Mrs. Saint, a first-class expert of the British Beekeepers' Association and a member of the Staffordshire Beekeepers' Association, has had an Italian queen from Signor Piana, of Italy, in a cage for six weeks. She had occasion to introduce this queen to a strong stock which was certainly queenless, but had a super on. She removed the super temporarily, opened out the brood frames slightly and placed the queen cage over the space, having previously removed the cardboard from over the candy, then replacing the super. Six weeks later she removed the super and was very much surprised to find the queen still in the cage. All the candy was gone and in the space under the cage there was a lovely new comb extending to the floor of the hive. This was full of brood in all stages, as was also the adjoining comb. The queen was then released by removing the perforated tin, and was accepted by the bees. Now, for some reason or other, this queen refused to leave the cage; not the worker bees' fault, for they have evidently fed her and carried her eggs down into the combs, thus bearing out in every detail your answer to " Ohio." This queen was one of the number imported from Italy by the Food Production Department in connection with the re-stocking scheme, and thus was in the cage between 7 and 8 weeks.

The California Honey Bowl.

BE A BEEKEEPER OR GET OUT.

The time has really and truly arrived in Beedom when to be a successful beekeeper we must catch on to the new order of things apicultural. A reconstruction is fast taking place in the Bee World. Unless bee owners learn to cope with the brood diseases, learn to feed and bring through all their colonies to good spring working strength, and to handle only as many colonies as they can farm properly and bring up to the standard of production to almost twice of old time beekeeping—unless we do this we had just almost as well step down and out, or the bee business will step down and out from us, practically speaking.

The Beekeepers' Item.

COTTON AS A MOST VALUABLE HONEY PLANT.

Cotton is the only important cultivated honey plant in the great South West......What makes the cotton plant doubly valuable is that it furnishes as a cultivated crop, one of the greatest sources of revenue......It not only furnishes wealth in dollars and cents. to the producers and others who handle it, but feeds and clothes multitudes, besides being used in the manufacture of commodities, in many of which the average person least expects its use.

But cotton does not yield honey in all localities where it thrives. Certain conditions of soil, climate and altitude affect it most peculiarly in this respect.

The Western Honey Bee.

PLANT THE CHAYOTE FOR YOUR BEES.

By **T.G.D.**

I would call your attention to the chayote, which not only furnishes an excellent vegetable at a time when variety is less plentiful, but supplies pollen and nectar to the bees as well.

It is a plant similar in growth to the cucumber, a vigorous perennial, which begins blooming the latter part of August and lasts until February or March.

The male flowers appear about two weeks before the female and yield a large amount of pollen.

The female flowers are on the extremity of the one-celled, inferior ovary, which becomes the pear-shaped fruit, and yield a pleasant tasting, white honey in abundance. Plant some about the bee yard, in the garden, or about a pergola or trellis, as a shade for yourself and for the bees.

The Domestic Beekeeper.

FEEDING SUGAR SYRUP WITHOUT THE ADDITION OF HONEY OR TARTARIC ACID.

By **J. E. Crane.**

If we dissolve twenty pounds of sugar in ten pounds of water and let it stand or pour it into combs it will very quickly crystallise or harden. but if this is fed to bees and they store it in combs it will as a rule remain in a liquid condition. Why this should be so I cannot tell, but I know it to be a fact. Some writers have told us that it is necessary to dissolve sugar in water and bring the water to the boiling point to prevent the granulation of the syrup, but we have not found this necessary. We dissolve the sugar in hot water because we can do so more quickly.

The British Bee Journal.

COMB FOUNDATION.

By **D. J. Hemming.**

I have not yet had any foundation from a dealer that the bees refused, but I have known them refuse foundation left in undrawn out sections the following season, probably because it had become hard and brittle. In the particular instance I have in mind they gnawed all the foundation out and rebuilt with new wax.

The Beekeepers' Gazette

CANDY AS FOOD FOR BEES.

By **C. B. Bartlett.**

Take it as something really tried out and proved that candy is **not** a good food for bees. There are certainly times and occasions when it is a convenience to have a few cakes, and, of course, it is of great value when sending bees by post. But as a food, as distinct from an emergency ration, it is a failure. I am quite aware that it **can** be well made ; but it seldom is. What I think ought to be better known is that its use, except as an emergency ration, should not be encouraged. I have used 10 tons, but I never shall again. It does not pay.

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† The writer is referring to the Apiary of Mr. Otsevich, of Monastir.—Ed.

Bee Craft.

LARGER BROOD CHAMBERS.

Those who advocate excessive depth have many sound arguments in support of their suggestion, but we must not entirely forget past experiences. Beyond a certain depth it is doubtful if bees could be readily induced into sections. The dimensions of the Langstroth frame were to a large extent governed by the requirements of comb honey producers and it would be distinctly unwise to exceed this frame in depth to any considerable extent. For wintering, the deeper the better, but the depth must not be so great that bees refuse to go into section supers.

The Beekeepers' Record.

UNION IS STRENGTH.

And now what of the future? There is a great field for the work of Associations if they will only rise to their opportunities. There are still several Counties without an Association, and there are some who, during the war, and owing to the discouragement of the epidemic of disease, appear to have given up and gone permanently into "Winter quarters." This policy has, we believe, been a great mistake, for those Associations who, despite the discouragement of war and disease, have not only carried on, but have pursued a forward policy are now in a flourishing condition. Several have doubled their membership, while two, situated at the extreme North and South—Aberdeenshire and Kent—have each now over 1,000 members, and we believe the numbers of both of them four or five years ago were under 100—what a blessing it would have been if an electric current could have been established to connect these two, that would have galvanised into life the other Associations lying between.

The Canadian Horticulturist & Beekeeper.

THE QUADRUPLE CASE.

By D. Anguish.

Recently I have noted several articles in **The Beekeeper** on the best cases for wintering and all are unanimous in their condemnation of the quadruple case. Why this should be so, and why it should be criticised as being so heavy and such a burden to pack and unpack when the writers have had no experience of them beats me. For myself I have used the quadruple case for many years, and have some still in use that were made over 25 years ago. They are made of one inch undressed lumber and are good cases yet. Those I have been making in recent years, however, are all of half inch or inch re-sawed, all but the bottoms which are one inch. It is a pleasure to pack bees in them and as simple as A.B.C. When packed, you have four colonies all close together helping to keep each other warm until next spring, and coming through the winter in the pink of condition

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Proceedings of Associations and Clubs.

THE IOWA BEEKEEPERS' CONVENTION.

Under the presidency of Dr. Bonney, the well-known American writer and honey producer, **The Iowa Beekeepers' Association** is making headway in the greater service of its members and beekeeping generally. At a recent Convention of the Association to which several editors of the Farming Press, apart from representatives of the Bee Press, were invited, the occasion was profitably utilised by cementing friendly ties with representatives of the fruit growing industry through affiliation with the **State Horticultural Society**. Other leading Associations in America practice the holding of Conventions for instructive and social purposes. In this Country, the Rev. Bartlett, Hon. Sec., **Gloucestershire B.K.A.**, is enthusiastically working for the holding of a Convention of beekeepers in his County and surrounding districts with a cordial invitation to other apiarists, for the purpose of discussing vital questions, exchanging knowledge, and for cementing better friendship amongst British beekeepers.

EXPERIMENTS WITH LARGE FRAMES AND ARTIFICIAL COMBS.

Arrangements are being made for the **comparative** testing during the coming season of the following frames at the Research Apiary of **The Apis Club**: (1) The British Standard (14″ × 8½″), The Deep Standard (14″ × 12″), Simmins' (16″ × 10″), The Langstroth (17⅝″ × 9⅛″), and Abushâdy's (12″ × 20″).

At the same apiary a large number of metal combs will be in actual use. Interested beekeepers are cordially invited to their inspection. Applications for our artificial comb and foundation by research students come from all parts of the world, yet strange to say both were lying idle on paper since last July, through the apathy of manufacturers and beekeepers alike; and even till now, through lack of co-operation and adequate interest, not the best type of both can be produced, and we mean by the best, the most serviceable, not the most ingenious.

I.W.D. LEGISLATION IN IRELAND.

The Irish Beekeepers' Association has lent its moral support to the demand for the extension of protective legislation to I.W.D. in Ireland. We have no doubt this will be an accomplished fact and in perfect working order long before leading beekeepers in Great Britain will realise that their personal quarrels have nothing to do with a public question.

GLASGOW & DISTRICT BEEKEEPERS' ASSOCIATION.

The first of a series of lectures arranged was given by the Rev. John Beveridge, B.D., Gartmore, in the Christian Institute, Glasgow, on the 20th November, his subject being "Beekeeping Experiences in Town and Country,"

His experiences of beekeeping during the last twenty or thirty years were illustrated by some excellent lantern slides.

There was a large attendance of members and friends, who much appreciated his very interesting remarks on the characteristics and habits of Bees. He gave many useful hints regarding the pleasures and profits of Beekeeping.

At the close of his lecture, many questions were asked by the audience, and the answers given were much appreciated.

A cordial vote of thanks for his lecture was unanimously passed.

The second lecture of the series entitled "The Bee and the Flower" will be given by Mr. Alec Steven, L.R.A.M., Glasgow, on the 16th December, commencing at 7.30 p.m. at the Christian Institute, Glasgow. This lecture also will be illustrated by lantern slides.

All interested are most cordially invited.

PETER BEBBINGTON.
Hon. Secretary.

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Our Book Shelf.

Books still accomplish miracles; they persuade men.—CARLYLE.

BEGINNER'S BEE BOOK.*

By FRANK C. PELLETT, Associate Editor, "The American Bee Journal."

In presenting the Beekeeping Fraternity with this excellent manual, the latest companion to his noted works, Mr. Frank C. Pellett has unduobtedly rendered a great service to those who most need it—the class of beginners whose future interest is much inspired by their early study. "In writing this book," the author tells us, "he has answered such questions as are put to him in the hundreds of letters that come to his desk from every part of his Country and from many foreign lands. There is a constantly increasing interest in beekeeping. Men and women in large numbers are looking to beekeeping as a possible source of livelihood, while others find an interesting diversion from routine duties with a few colonies of bees. The novice wants a book that covers the fundamental without going too much into detail regarding the various systems of honey production. This book is designed to meet such a need......It has been the author's aim to set down only such facts as will be of practical value to the beginning beekeeper in producing and marketing honey. The author has had practical experience in the commercial production of honey. His work as State apiarist of Iowa and as Associate Editor of **The American Bee Journal**, has given him opportunity to visit many of the most extensive beekeepers in the United States and Canada, and to observe the various systems of honey production which are profitably followed. Nothing is included in the book which it is not believed will stand the test of general usage under a variety of conditions."

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* J. B. Lippincott Company, Philadelphia and London, 1919; 5s. net.

Those who are familiar with the usual lines adopted by most authors of elementary manuals which are generally borrowed from one another, will be agreeably surprised on reviewing this beautiful book which is symbolic of originality, selective and comprehensive in teaching, and transmitting to its reader the inspiration one is accustomed to derive from the leading bee journal, of which Mr. Pellett is the worthy co-editor.

WHAT CONSTITUTES A COMMERCIAL APIARY?

It is being proposed in New Zealand for legislative purposes that an apiary of more than ten colonies shall be considered a commercial apiary, and that every commercial apiary and out-apiary shall be annually licensed by the Department of Agriculture. This is presumably for the sake of prevention of overcrowding or "dumping" in any particular district.

"WILD" INSPECTION.

"Senex" writes: If an inspector be appointed, he should **not** be a local man (or woman). There is only one beekeeper in **my** immediate neighbourhood (and he might not be appointed) whom I should be pleased to see saunter into my place, in season and out of season, at his own sweet will and unannounced, to tell me what to do and what not to do to my bees.

THE NEED FOR WATER IN TRANSPORTING BEES.

Opinions vary as to the need of bees for water during transport. Given the benefit of the doubt, especially when they are headed by a prolific queen and have some brood on hand, it may be helpful to spray some water in empty cells of the combs, or to fix a small sponge of water in a corner of their travelling box when being prepared for despatch.

WEATHER FORECASTS.

Our readers will be interested to know that the Meteorological Office at the Air Ministry, Kingsway, London, are accustomed to issue forecasts of spells of both settled and unsettled weather, to those who subscribe in advance for this purpose. The fee charged for this valuable service is comparatively a very small one.

MATING EXPERIMENTS.

Mr. G. G. Desmond, of Sheepscombe, Gloucestershire, writes: The experiment of Mr. Sladen, shewing that drones only two weeks old are unsatisfactory mates is a very important one. It points to an effective contrivance on the part of Nature to ensure cross-fertilisation of queens. The first preparation for swarming on the part of a hive is the building and stocking of drone cells. If eggs are laid on the first of May, the young drones are sealed over on the ninth. Then the nurse bees find an outlet for the food that is swelling their glands by founding queen cells. The young queens will emerge on May 24th (after the departure of the swarm), or the same day as the young drones. In about a week, the queen will be flying to meet the drones and as the drones of her own hive are too young, her mate must come from another hive that has raised drones earlier. Only after waiting more than another week for the desirable stranger will she mate with one of her brothers as a *pis aller*

By the way, how soon after leaving the cocoon does the drone leave the hive. I presume about as soon as the young queen. The worker bee is kept at home by her duties probably three weeks, the exact time that she was being progressively tended by other young bees while she was in the cell but the drone, I suppose, goes out on the fourth or fifth day of his winged existence. He is not then at his full vigour and, especially if there are older drones about, the queen avoids him. In 1912 my bees were in London, probably with no others within a mile or two. Queen cells raised on the bees' own initiative hatched out on May 15th and the queen did not begin to lay till June 21st—an interval of 37 days. I suppose she was fertilised proportionately late because the drones of her won hive were too nearly of her own age and other drones were not to be had.

This expedient to secure cross-fertilisation reminds us of a like provision in vogue with some flowers where the pistil ripens before the anthers, so that it is either fertilised in the first two or three days by pollen from another flower or, in the last resort, by pollen from its brother anthers. Botanists call this protogyny. Other flowers avoid self-fertilisation by the expedient of protoandry, that is by ripening the anthers before the pistil.

"The British Beekeepers' Guide Book" is right in telling us not to start the queen cells till the drones intended to fertilise the young queens are hatching out. They will thus be nearly three weeks old by the time the virgins are flying. And if we have raised our special drones abnormally early there is very little chance that our queens will meet undesirables when they go a-mating.

THE FAILURES OF THE B.B.K.A.

So much dogmatic criticism is advanced against one leading Association or the other that one has lost hope in receiving any definite criticism that may be considered of beneficial influence. Responding to our questions a non-member of the **B.B.K.A.** and a well-known writer at last informs us: "I am inclined to think you are under the impression that I am angry with the **B.B.K.A.** Council for personal reasons. This is quite a mistake. I have not been disappointed in any of its leaders, for I have not the remotest idea who its leaders are. My chief complaint is this. The Council (whoever they may be) have got into their heads that, if a man has kept bees by modern methods for a certain number of years, he is in every way competent to give his opinion on **all** points connected with bees, and it is bad form for them to question anything he may say. For instance, if a new disease appears, and if this man says, in an article in the **B.B.J.** that the correct cure is to spray the bees with pure nitric acid, they never gainsay him; whereas if one of our great chemists, such as Sir James Dewar, were to reply that the suggestion is wrong, and that the 'expert' clearly has not the smallest idea what would be the effect of spraying bees with nitric acid, he would be snubbed on the ground that he has never handled a hive of bees, and therefore the first man must know best. At the same time, they would be careful not to spray their own bees with it until the poor cottager had reported that it was efficacious. Of course, this is an exaggerated example; but many people have observed dozens of such cases as I mean. It is exactly on a par with a man saying that, because Sir Oliver Lodge is a grest physicist, and because he says that ghosts exist, therefore it must be true that they do exist. Progress is impossible while such things go on." Perhaps one of the offenders on the **B.B.K.A.** Council would care to provide us with a reply.

HELPING THE DISABLED.

Messrs. Pearson and Gale, of Marlborough, are offering a special advantage to persons disabled on active service for the establishment of profitable apiaries.

We have been asked what is it that we consider the measure of "prestige" in business. To our mind this goes beyond capital and profitable efficient production. Much of it rests on disinterested public service.

BEES AND BEEMEN OF OLD.

Mr. Basil H. Howard is contributing a series of interesting historical articles under the above title to the **N.Z.B.J.** Relative to Ancient Grecian Beekeeping he observes: "The hills and vales were thickly clothed with wild thyme and flowering bulbs rich in nectar—a beekeepers' paradise. Bees and honey there were in abundance. Little wonder, then, that scarce a book has been written in the Greek language wherein the bees pass unmentioned. Every writer, were he poet, philosopher or moralist, had a word or more to say on the organisation, the instinct, and the industry of bees—in fact, the eulogy of bees was well nigh a literary commonplace."

BURNS 3,000 COLONIES.

In a letter to **The California Honey Bowl** for October, Mr. Newton V. Cole strongly pleads for thorough inspection and removal of infection sources. Comparing the past history of Ventura County, U.S.A., with its present conditions he says: "In regard to disease in Ventura County, will say that anyone can keep bees here with some pleasure. I have had a number of leading bee men out with me lately to look over conditions in Ventura County and they find conditions greatly improved in the last three years. This is the way it has improved. Three years ago we had 11.000 colonies of bees with 900 colonies of disease. To-day we have 20,000 colonies, with only two thousand colonies of disease, which is under control. I visit every apiary in the County every winter and look after dead colonies or weak ones and see that they are looked after. I find this one of my most important inspections, as these colonies are very dangerous. My first winter I picked up and burned 3,000 colonies; the second winter I picked up less than 500. Give your inspector a boost and quit kicking him if you want to get results."

MILLER AND ROOT MUCH BETTER.

We have much pleasure in announcing that Dr. C. C. Miller, who is now in his eighty-ninth year, has recovered from the serious cardiac attack which incapacitated him for two months. It is feared however that the lovable doctor will not be able henceforth to do much literary work.

Mr. Ernest Root, we are equally gratified to learn, has successfully emerged from his radical mastoid operation and is back at his desk busier than ever.

TRANSPORTATION OF BEES BY AEROPLANE.

The Canadian **Aero Club** has accepted a business contract for shipping bees from the Southern States to the North by aeroplane.

HONOURING MR. JARMAN.

The **Kent B.K.A.** have awarded our worthy colleague and friend Mr. Jarman their "Award of Merit" in appreciation of his most valuable service in making **Bee Craft** the live periodical it is. Only one is given each year. Mr. Judge is the only previous recipient. Considering the enormous amount of work which the latter has put in for the cause of progressive beekeeping, Mr. Jarman is indeed in good company. It is pleasing also to learn that Mr. Judge is intending shortly to devote all his time to beekeeping interests, both literary, co-operative, and industrial. As an experienced queen breeder, honey producer, and co-operative organiser, with a true wealth of knowledge, his growing interest in practical apiculture is a decided gain to the Craft

MARKET REPORTS.

Readers interested in detailed international market reports will find much useful information in the American Bee Press and especially in **The Domestic Beekeeper** which is published monthly at Almont, Michigan.

A SUGGESTION TO OUR BEE ENGINEERS.

Now that a stronger metal comb has been evolved claiming, in addition to the original aim of strength, distinctive engineering features, our bee engineers can help in solving the problem of feeding, during dearth of natural food in the season, by introducing a pumping or other suitable machine that can fill these combs with syrup in a minimum of time, so that these may be promptly distributed to needing colonies.

LEGISLATION FOR I.W.D. IN IRELAND.

The **B.K.G.** reports that at the meeting of the Council of the Department of Agriculture and Technical Instruction for Ireland, on November 12th, the Rev. J. G. Digges, M.A., proposed: "That there is urgent necessity for the inclusion of 'Isle of Wight' disease, and other contagious diseases of bees, in the provisions of the Bee Pest Prevention (Ireland) Act." The resolution which was seconded by Mr. T. McGivney was passed unanimously.

THE DEVELOPMENT OF L'APICOLTORE.

Dr. Vincenzo Asprea, the learned editor of **L'Apicoltore,** informs us in a noble message of encouragement to THE BEE WORLD of the change of home of his famous magazine now published at Reggio, Calabria, Italy. It is completing this month its 52nd year, without showing signs of senility. On the contrary, it is continuously developing in vigour and brightness to the gain of the Beekeeping World.

KUNKEL'S HONEYCOMB FOUNDATION.

Mr. V. V. Kunkel, of Los Angeles, California, is introducing an artificial comb foundation which is apparently a replica of that introduced years before by several leading apiarists in different Countries, namely a combination of metal and wax, the disappointments through its employment and the cost of its production, if the waxing is done properly, have long ago ruled it out of economical and scientific consideration. Apparently his only modification is the use of wires for its support, which will not add to its advantage.

Is it difficult to appreciate that a wax comb built on metal foundation is much firmer than one built on wax stuck to metal, when such wax is not immune from blistering, despite all previous experimental attempts to prevent this misfortune? The manner in which bees carefully establish the inner margins of their cell walls on metal foundation is truly remarkable. We cannot detect any propolis mixed with the wax, yet it is very firmly pressed to the ridges of the foundation, so much so that one of the experimental models which toured all over the Country for several weeks and endured endless concussions has returned to us not the worse for its journey, despite the delicate new comb mounted on it. When the latter is purposely injured, one still finds that the lower wax ridges of the cell walls are firmly adherent to the metal ridges.

In view of these facts and of the established views on which non-wax foundation is based, it seems strange to revive a discarded historical appliance that dates back to over half a century.

SPRING FEEDING FOR 1920.

The Board of Agriculture and Fisheries are allowing beekeepers a ration of 6 lbs. of sugar per colony for the period, January-May, 1920. In view of the shortage of sugar in many Countries including America, where many colonies are declared to be threatened with starvation and where beetroot sugar is now said to be as good a food for bees as cane sugar (apparently in the same fashion that rhubarb leaves were recommended in this Country during the war as an excellent vegetable for human consumption)—in view of all these troubles, we are told "to be thankful for small mercies."

DEATH OF JOSEPH THEILER.

The **Am. B.J.** in reporting the death of Joseph Theiler, of Rosenberg, near Zug, Switzerland, on the 21st of last August, observes: Mr. Theiler was the owner of the most interesting bee museum in existence. This museum is well enough known to be mentioned in the tourist guides of Switzerland, and we visited it in 1913. An account of this visit was given in the American Bee Journal of August, 1914.

"THE BUSY BEE."

Messrs. Bees, Ltd., of Liverpool, announce that early in the new year they are publishing under the above title a gardening and home magazine dealing partly with beekeeping. We look forward with interest to its appearance.

A JOINT-WONDERER.

"I intend this year to try the 14″ × 12″ frame and note the results, using **metal foundation.** I had noticed with **wax foundation** that it was not as we were told that a thick make was best as it gave the bees more wax 'to draw out.' In the case of my bees I always noticed that the first start of cell walls on foundation was always of a different colour to the foundation. If they were 'drawing out,' why the difference in colour?"—Fred. W. Miles, Amesbury.

The Arena: Letters to The Editor.

THE TREATMENT OF FOUL BROOD.

To the Editor of The Bee World.

DEAR SIR,—In **L'Apicoltore** of Milan for Nov.-Dec., 1919, the following interesting comments, of which I give a translation, appear: "A French apiarist whose name is sufficient guarantee, Alin Caillas, chemist to the Central Association of Apiculture of Paris, makes an exceedingly interesting communication to the French Press in regard to a new remedy for foul brood. As the result of research undertaken and carried out by him, Mr. Prudhomme, of the Universities of Paris and Strassburg, an old student of the Pasteur Institute, has been able to assimilate the microbes of brood diseases to the bacilli of typhoid fever. In fact these microscopic germs develop in the intestines of the larva causing its death in a short time. Having succeeded in isolating, cultivating and determining the several microbes of foul brood, Mr. Prudhomme has been able to prepare an entero-vaccine of polivalent character to be administered via the digestive tract.

This vaccine is dissolved in honey or sugar syrup to be fed to the affected colony. The effect is not long in manifesting itself; for in a very short time the development and propagation of the disease cease.

The experience gained so far is highly encouraging. Nevertheless the inventor desires that their experience be further pushed in the general interest of Beekeeping by applying the new remedy under the widest and most varying conditions. With this object in view, samples of vaccine will be sent to any apiarist who may wish to try it, provided he undertakes to follow the very detailed instructions furnished, and to communicate the results obtained. The address is :— M. Prudhomme, Rue Cottal, Nice."

This is an opportunity which should not be ignored by our apiarists of scientific education. All bacteriologists interested in apiculture who know sufficient French to be able to follow Mr. Prudhomme's instructions ought not to fail to provide themselves with a sample so generously offered. I.O.W. disease has, I fear, temporarily driven the much more dangerous brood diseases from the thoughts of most beekeepers. Like rabies in dogs, we have our insular position to thank for our comparative freedom from Foul Brood, nevertheless it is well to follow intelligently and practically all new methods of fighting a disease which at any time may present itself in our apiaries.

H. M. STICH.

Paisley.

SELECTIVE MATING.

To the Editor of The Bee World.

DEAR SIR,—I wish to put before your readers for consideration a new method of selective queen mating, although I have not yet been able to try it. It is a combination of Cheshire's method and that described in the September issue of THE BEE WORLD. Cheshire after preparing both drone hive and mating nuclei, confined them in a cellar. Then when the queens were judged ready to mate, the hives were brought out on a warm afternoon ; after the drones of other colonies had ceased flying. They were then fed with a little syrup and induced to fly, when most of the queens would take the mating flight.

The new method which I am suggesting is to stock some of the nuclei with drones ; (not all as recommended in THE BEE WORLD). Each nucleus hive should be fitted with a claustral chamber. When the drone nuclei are made up, they may be shut till established, and allowed to build a queen cell or two to pass the time ; which may be replaced with selected cells when ready.

When the queen cells are ready, the required nuclei are made up. After giving the cells, each hive is "shut" for about six days. On the next day, after the drones of the other colonies have stopped flying, the drone nuclei are released and fed. When the drones are well on the wing, the queen nuclei are treated likewise. They are shut in again at night, and the process repeated for several days ; until satisfied that each queen has mated.

The advantages of this combination method, in my opinion, are : (1) Ensuring that the selected drones are the only ones flying when the queens come out ; (2) Gaining all the benefits of your method without having each nucleus stocked with drones ; (3) The security presented by the claustral chamber which to my mind is superior to either grass or paper as a means for preventing the bees from flying ; and may be used in case the nucleus shows signs of being robbed.

Hoping I have made these points clear, I beg you to criticise the method as to its practicability.

Crank Hall Farm,
St. Helens,
Lancs.

WILLIAM SWIFT.

[So far as labour is concerned, there is no greater trouble with this method than that to which our correspondent refers. We are not sure however that drones from other apiaries will be excluded. Further, in warm weather, the detention chamber is anything but superior to other means of detention, however unsatisfactory the latter may be. When reperusing our notes on this subject, Mr. Swift will observe that the aim is to ensure as well as possible that a particular queen has to mate with a particular type of drone.—Ed.]

THE SPACING OF FRAMES.

To the Editor of The Bee World.

DEAR SIR,—An interesting letter appeared in the **British Bee Journal** for Nov. 28th,1918,on this subject, but apart from that it has not been mentioned for some time.

The advantages of the American spacing of 1⅜″ from centre to centre over the English 1½″ has always appealed to me. The former is more nearly in accordance with nature in breeding combs and in use it tends to keep the combs more flat and even and leaves just the right amount of room between the cappings of sealed worker brood in combs facing each other. Drone comb too is rather less likely to be built when frames are so spaced.

It is claimed that 1½″ spacing provides more room for stores for winter. This, of course, is so and perhaps. with the small "British Standard" frame which gives so little superficial room for stores above the brood nest, the 1½″ spacing is better than the other, but I am sure that it will be found that with larger combs, such as the Langstroth, or better still with the 16 × 10″ spacing, 1⅜ is entirely sufficient for stores and much more convenient in use.

By using 1⅜″ spacing, it becomes possible to construct a spacer similar in principle to Root's metal spacer, but which will space a ⅞″ frame 1⅜″. This form of spacer having two points of contact, one at top of frame and one about one third of the way down, keeps the frame spaced accurately right to the bottom and in this respect is very greatly superior to the W.B.C. "End," which merely spaces the top bar and allows the rest of the frame to swing freely. It is more than ever necessary to have some device such as this for use with deeper frames than the Standard, as without it frames will not hang perpendicularly in a hive.

In Bee Guides much stress is often laid on having all hives perfectly level ; but provided that the hive is approximately so, it matters not at all whether it is absolutely at a dead level or not. Any one can demonstrate this in a hive with glass sides which exposes the ends of the frames. It will be seen that the frames, though accurately spaced with "metal ends" **at top** are far from accurately spaced **at the bottom**, indeed it will usually be found that some actually touch or nearly do so at bottom.

We have got for the 16″ × 10″ frames a metal spacer as described above, which will, I think, be found satisfactory, which spaces 1⅜."

I can assure your readers from long experience with 16″ × 10″ frames that these will contain quite sufficient stores at 1⅜″, indeed the quantity of syrup that a stock of bees will store in six 16″ × 10″ combs is astonishing and with 1½″ spacing it requires a very much larger quantity to be fed to obtain plenty of **sealed** stores. Of course I am speaking of bees storing with a good sized brood nest so as to leave plenty of empty comb below stores for the cluster.

Yours faithfully,

Brightwell,
Wallingford.

ROBT. B. MANLEY.

Modern Inventions.

The Metal Foundation Mill.

By T. I. ROBINSON

When the questions of hard steel rollers for milling the metal foundation was first considered, the difficulties which have been encountered were never even dreamt of, and it was only after the method of producing the rollers had been entirely revised that anyone would take the job. Even then, it has been very difficult to get an early delivery.

In order to overcome the difficulty of manufacture which obtains with a solid roller, they were re-designed to be made sectionally as shown in Fig. 42, which is a front elevation of the mill, on the right hand end of bottom roller.

The sections are made so that the high points on the sides of one fit into the low points of the section each side, and are threaded on to a central shaft, this giving the succession of alternate trihedral points required for indenting the metal plate.

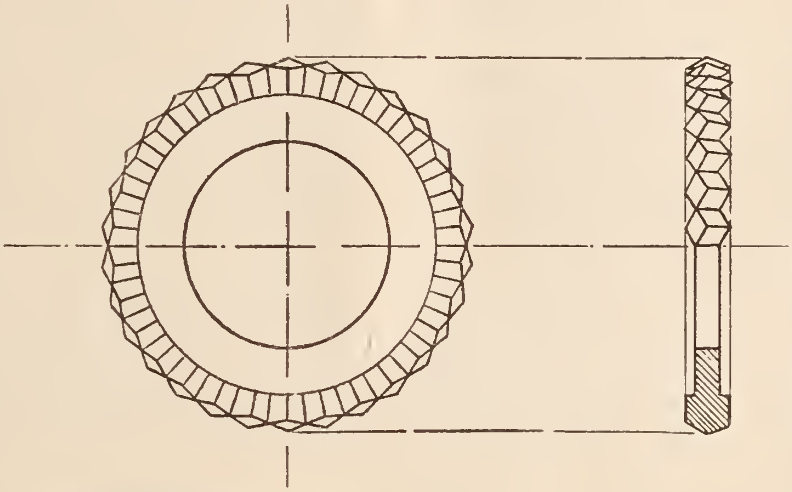

Fig. 41.

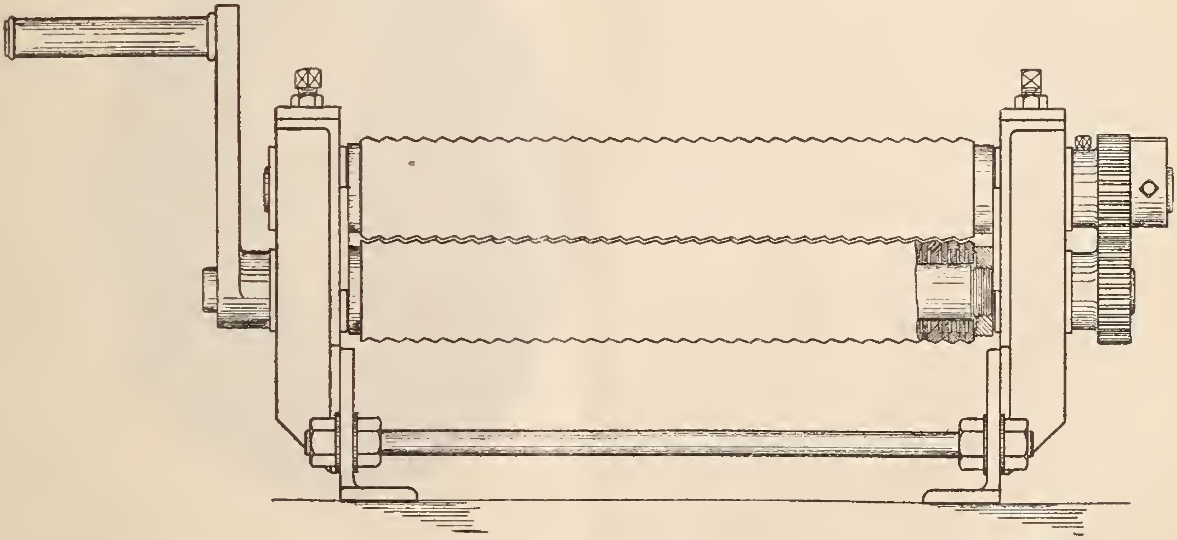

Fig. 42.

One of the sections is shown partly in section in Fig. 41. The sides are recessed out as shown in the sectional portion for ease in manufacture, as the cutting of these side serrations presents the greatest problem to be surmounted owing to the angle being a variable one from front to rear, necessitating a certain amount of hand work. When it is stated that there are thirty of these serrations on each side, thirty trihedral tips (ninety points to be cut in all) and 5½ sections to each inch, it will be realised that the making of these rolls is of some magnitude and calls for extreme accuracy, the allowable error being not more than three thousandths of an inch.

The end sections are keyed on the shaft to maintain a definite position and the total number are clamped with two nuts, one at each end, which are in turn secured against turning round by a small screw so that the whole turns as a solid mass.

The advantage of this method of construction is that any damaged part can be easily and economically replaced, as the sections are made in a jig to secure uniformity; or should wider rolls be called for, it would be quite easy to make longer shafts and add further sections to make up the width required.

The frame of the mill does not call for any comment as it follows the usual practice; but, owing to the impossibility of obtaining castings, has had to be made up of pieces of steel angle, instead of an iron casting. The rollers are permanently kept apart, the correct thickness of the material, by a rubber buffer between the top and bottom bearings.

It may be noted in conclusion that all the sections have to be hardened, and owing to the abrupt changes of sections and sharp corners render the risk of spoilage rather on the high side, another cause of the high cost of the mill.

However, the rolls are practically indestructible as made, and will turn out the foundation with the same facility as the housewife mangles the domestic washing.

The Barbeau System of Queen-Rearing.*

Mr Barbeau describes as follows three methods of queen-rearing by his system to which we have already referred in the August and September issues of THE BEE WORLD :—

First Method. Remove the queen from a strong colony, and allow the bees to rear queen-cells in the natural way. But after 7 or 8 days, remove all the queen-cells, whether finished or just begun. At the same time, shake or brush into the hive, after having smoked it, the bees of 2 or 3 frames from another colony. Be sure to locate the queen of each colony so as not to remove her.

Better still, if you happen to have a small swarm, would be to unite it with the queenless colony. The aim, in all this, is to have a large number of young bees to feed the royal larvæ.

Three or four hours after having prepared the colony as above stated, cut out, with the punch, such larvæ as you may wish to use from your best selected colony. Let them be larvæ about a day old, of the size of a lettuce seed. After having removed as many as you desire, 20 or 30, or more, insert them into the capsules and screw these capsules into a brood comb of the queenless colony. At the end of 10 to 11 days, the queens will hatch.

The above method is a little slow, but it is very sure, especially for beginners.

Second Method. This consists in removing from the hive the queen and all the combs of unsealed brood. Leave in the hive only 2 combs of entirely sealed brood almost ready to hatch. Add to these also some combs of honey and, if you wish, another comb or two of entirely sealed brood and young bees from other hives. Always be particular to locate the queens of each hive so as not to give them by error to the queenless colony.

Prepare your queen-cells as before, and insert them into a dry comb, which you then place in the centre of the queenless hive. This comb should be placed into the breeding hive only 3 or 4 hours after having prepared the colony.

Third Method This consists in placing a queen-excluder between the brood chamber and the upper storey of a very strong colony. For this purpose it is necessary that the colony should fill its brood chamber and super with bees. If you do not have any colony strong enough for that, you must add bees to it a few days previously. Of course the old bees united to it will go back to their home, but the young bees will remain, and it is the young bees that are needed to feed the larvæ.

If your colony is of sufficient strength, give it, in the super, two combs of sealed brood, between which you place your comb of capsules.

Should the bees of this colony refuse to build queen-cells out of the capsules, which is a rare occurrence if the colony is strong enough, you can compel them to build the royal cells by removing this super and placing it on the stand of the main brood chamber, setting the main brood chamber right by the side of it, but with its entrance at the opposite side, in the rear instead of the front. This operation should be performed early in the morning. The next day, you place both hive and super back to their original position, with the super above the main brood chamber. You will then find that nearly all the capsules are being worked upon. This method is rarely needed to compel the workers to construct queen-cells. It requires a little more experience than the first two methods described above.

To prepare a comb of capsules, take from the colony containing your choice queen, a comb containing larvæ a day old. Carry it away from the apiary to a convenient spot. Then, with the punch, cut out as many cells as you need and place them into the capsules with the "pusher." Then get a comb from your breeding colony and screw the capsules into it. It may then be put back in the centre of the hive as stated above.

At the end of 8 days, when the cells are sealed, and the queens getting ready to hatch, build up nuclei, or make divisions, or remove your old queens and enclose your queen-cells in royal cages, so that when they hatch they remain prisoners. Within 2 or 3 days, you may release them to be fertilised.

You may introduce a hatching queen in this way in a colony having a young queen ready to be fertilised. Just as soon as she begins to lay, you may remove her and release the other at the same operation. You simply take off the cover of the cage, and the bees consume the candy and release the queen. By alternating in this way, you may secure laying queens very rapidly.

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* The Am. B.J., September, 1919.

REMINISCENCES

By R. WHYTE.

Some twenty odd years ago I struck Manchester late one Saturday night and on the way to my Hotel I purchased a weekly paper. To induce sleep that night when I got to bed, I looked through the contents and noticed an article on Bees and Beekeeping. This I got very interested in. Amongst other things the writer mentioned the record "take" of 350 lbs. honey which had been secured by Mr. Lancelot Quayle, from one of his hives at Glen May, I.O.M.

When I laid that paper aside and snuggled under the bed-clothes I registered a double vow before I slept that I would purchase a hive or two of bees and I would visit that chap in the Isle of Man.

Both vows I kept. Mr. Quayle and his charming lady I count amongst the friends I delight to visit and many a happy day I have spent with them in their ideally situated home in Mona's Isle.

My first two hives were of a pattern made by a famous Scottish Beeman, William Thompson (Pan), familiarly known as Bee Will. I remember the hives and frames were altogether different from the present-day hives in sizes and get up. Particularly do I remember the slips of wood that fitted in between the frame tops which I had to pick out with a knife when I wanted to take out a frame. This taking out of frames, I am afraid, was a too frequent occurrence, but as the attack of Bee fever was an extremely virulent one in my case, the poor bees had to suffer from these ever recurrent manipulations.

R. WHYTE, Esq

President, Glasgow Beekeepers' Association.

This poor little nucleus of an apiary of mine was started in Lanarkshire some two and a half miles from Bee Will's home in Blantyre. Many were the stories told in the district about Thompson's doings with bees and of his many contrivances.

In 1865 when wax foundation was given to the world Thompson was the first in this country to make a success of its manufacture. In this, as in other things, he was always ready to pass on his methods to others. Thompson always contended that the honour of the invention of moveable combs did not belong to Langstroth. This invention was the work of a Scotsman whom he knew. Thompson certainly made and sold these moveable comb hives. The two old ones I started with were of this type. Frame combs were without a doubt considerably older than the date of Langstroth's patent, but the fault invariably was that they were not careful in seeing to an **exact bee-space** being left between the outside of frame and side of brood chamber. The insistence of this constitutes Langstroth's special claim to merit in this connection; although I doubt very much if his patent would have been held valid in this country. A generation ago, one heard a lot about the Wells' system of keeping two queens in one hive, yet, many years before Wells, Thomson had kept and described how to work this system.

John Hewitt, of Sheffield, and the Scotsman Thomson are men who in many ways merit the respect and admiration of the present generation of beekeepers. Endowed as both were with an unbounded love for bees, and each with a highly inventive turn of mind, it is not surprising that at a time when moveable comb hives were coming into vogue that these men should do something more for the craft than merely mark time.

Mr. Hewitt is a most voluminous and informative correspondent and one who is always ready to give of his best. Many are the queries I have set before Sheffield's Bee Master and never yet have I found him at fault. Encyclopædic in scope and accuracy of facts, I value his letters much. One of my real letter days was when I journied to Sheffield to spend a night under his roof. What with examining some of the rarer books in his very extensive Apiarian Library—some of which until then I had not even heard about—and following the various types of queen cages until his final solving of a queen cage for long distance journeys. This being done to enable Frank Benton to ship European and Eastern queens to this Country and America. In this, Mr. Benton has acknowledged his indebtedness to Mr. Hewitt. Specially interested was I in reading some of Cheshire's correspondence with my friend.

Cheshire's work in connection with Foul Brood is valued highly to-day and Mr. Hewitt was able to help in this. It is not generally known that it is to Mr. Hewitt we are indebted for having postal facilities for transit of live bees; yet, it is so. In fact, bees are the only live animals carried through the British Mails.

Another delightful correspondent was the late W. Z. Hutchinson, of Michigan, an expert photographer and able Beeman. Knowing more than most experts, he was the soul of frankness in telling you "I don't know" when he was asked to solve a problem he was ignorant about—would that there were more of his kind!

Mr. C. B. Bartlett, of Witney, one time, if not yet, the most extensive beekeeper in Britain was a friend I always enjoyed visiting. For years every time I visited London my steps turned every week-end towards that Mecca of my thoughts, Witney. What a lot these Bee Farmers can tell you that the Text Book Authors knew nothing about! I say Mr. Editor, why don't you get this chap Bartlett to write to THE BEE WORLD? I know the beggar is hard to move, but not through want of ability to write or want of knowledge to impart as he is chock full of both.†

Oh, dear! how these recollections run away with one's pen when once a start is made! Mr. Editor, just wield that blue pencil mercilessly. I won't object in the least

But to return, my first Preceptor in apiculture was a very able Beeman, particularly skilful was he in diagnosing skep stocks—how it would have gladdened his heart could he have looked upon the long rows of Dutch skeps in the orchard of his one time pupil! His opinion—and it is mine also—was that there is a system of skep **plus** frame hive management that is more profitable and hygienic than the usual hive management in vogue now-a-day.

Bee literature is fairly large and I have covered a fair extent of it in my reading. It is a far cry from Virgil to Alexander, Doolittle and Dr. Miller, but I have skimmed merrily over this field plucking flowers of knowledge here and there: particularly useful in hive management have I found the three American writers I have just mentioned. Beekeeping, however, is a business, or a hobby, that can only be learned by experience. No one can possibly learn it otherwise, and yet the experience of others is extremely helpful to explain many difficulties that arise in practice.

Beekeeping, during the many years I have practiced it, has been a continuous joy and solace to me against the worries and annoyances incidental to a commercial life; in fact, the romance of insect life is getting for me more and more absorbingly interesting as the years go fleeting past.

Presentations

"THE MANLEY HIVE."

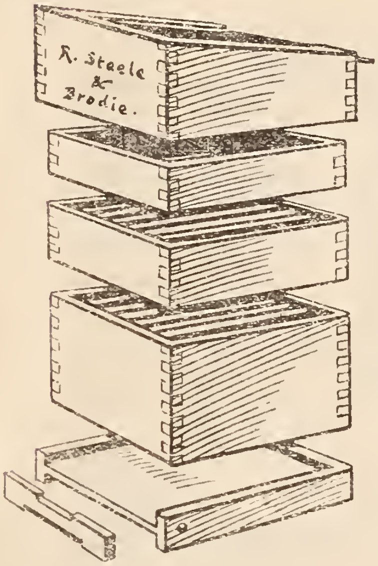

Fig. 43. "The Manley Hive."

The growing demand for a British hive on American lines to take a large frame has justified the creation of the Manley Hive, prior to its introduction, Messrs. Steele & Brodie, of Wormit, Fife, had developed on approximate lines what they termed the "Wormit" Commercial Hive, details of which, also of many other hives and useful appliances both original and modified are given in their interesting 1920 Catalogue which is excellently arranged and printed.

They have kindly presented **The Apis Club** with a miniature model which bears the high standard of workmanship for which they are noted.

Through the courtesy of Mr. Robert Manley, we are able to present our readers with the following notes from his pen on the subject of his hive:

Having for some years used the Simmins frame, I felt that in order to greatly extend my apiary it was necessary to get a simple single walled hive made on American lines. I therefore worked out the idea and at their request placed it in the hands of two firms, viz., Messrs. R. Steele & Brodie, in Scotland, and Mr. Wm. P. Meadows, in England. The first of these firms have now completed hives and are ready to deliver, the latter will be in the same position shortly. The two firms' hives differ only in unessential points, the brood chambers, supers, etc., being interchangeable and the same in size, but slightly different in workmanship and method of lock cornering. These two firms should try to work together in so far as establishing this as a standard size, being free to improve in any way, provided the size is kept precisely to the standard now established. This size is 18½″ × 18½″ outside and the timber used is ⅞″ leaving the inside dimension 16¾″ × 16¾″. I advise all who think of trying these hives to be sure that these measurements are adhered to and to refuse any variation. This is of the utmost importance.

Steele & Brodie's hive now on sale consists of a reversible floor almost exactly after that of the A. I. Root Co., and has a detachable flight board about 10″ wide.

The brood chamber takes 11 frames and dummy frames spaced with double contact spacers at 1⅜″. Will take 10 frames and dummy at 1½″ spacing.

Supers can be had for 16″ × 5″ frames, spaced 9 to a super; also for "standards" and "shallows" if desired.

Section supers can be had for 24 no-way sections 4¼″ × 4¼″ in 8 frames of 3 sections with fence separators which are constructed to hang like the section frames.

Also section supers will be made for 32 5″ × 4″ plain sections in frames—4 in frame.

The roof is constructed in a unique way with a sheet of asbestos concrete grooved in, and will be waterproof. There are no plinths whatever throughout. A shallow eke is provided for packing or for use as a chaff tray, and the whole is accurately and substantially made of yellow pine.

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† We have not failed to request Mr. Bartlett to favour THE BEE WORLD with his contributions.—Ed.

By next month I expect Mr. Meadows' hive will be on sale and I hope to send you a few notes then on it. Meanwhile anyone can get particulars of this hive from either of these firms.

Lest any of your readers should think I am financially interested in these hives, may I say that I am not. It has cost me many pounds sterling to get this done; and when I started, my only idea was to get the hives made for myself.

THE "ROYAL CARRIAGE" QUEEN INTRODUCING APPARATUS.

In evolving this intelligent appliance Mr. E. W. Dempster, its originator, had in mind the difficulties of the amateur beekeeper, and especially the beginner, who lacks the help of the expert in effecting queen introduction to a prepared colony. Upsetting the bees by clumsy manipulation is often an adverse factor, and this appliance is intended to greatly minimise, if not so completely obviate, their disturbance. We need not repeat here our previous remarks on the advantages and disadvantages of queen introduction by means of the travelling cage method.

Mr. Dempster writes: "As soon as the stock is known to be queenless place the carrier over the feed hole in the quilt, pressing the points into the tops of the frames, and cover the dumb-bell shaped hole with the piece of glass supplied. Send the cage to have a queen inserted. Grooves in the ends corresponding with those in the travelling boards prevent the string slipping. When the queen arrives raise the wire (shown on the carrier) and place it and the cage at the position "**closed**," and after twelve hours replace to "**open**."

During the whole of the operations described, no bee is disturbed, while the glass top enables one to see when and whether the queen has entered the hive."

The appliance is beautifully made and belongs to the standard of cabinet furniture.

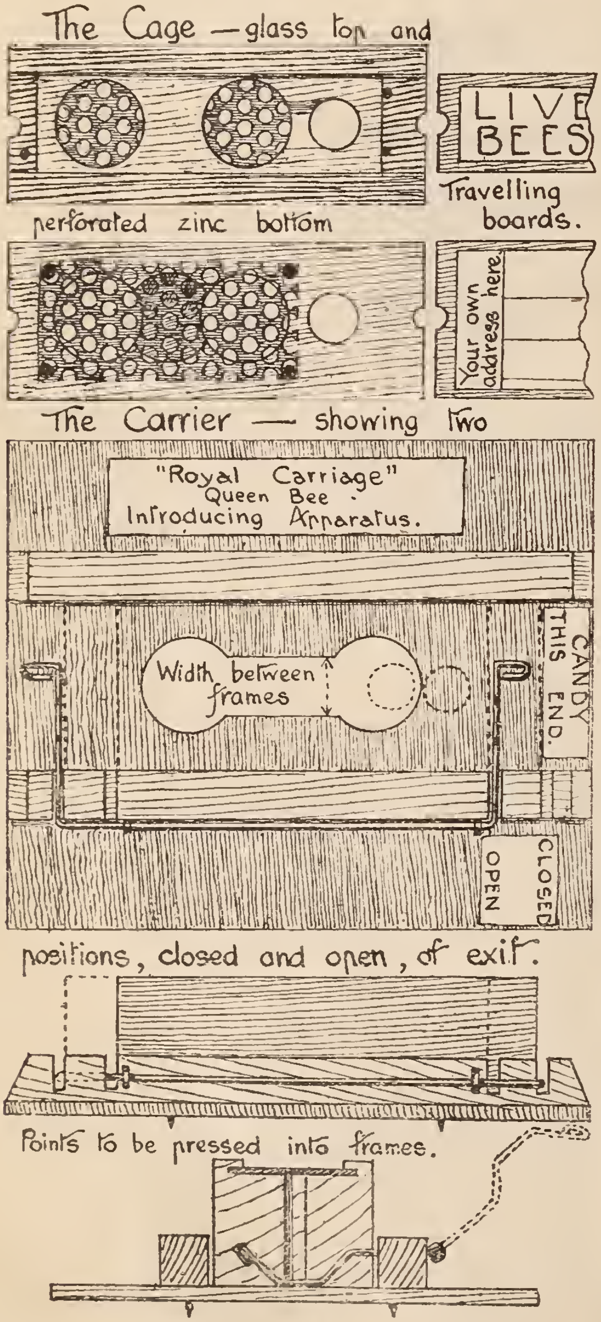
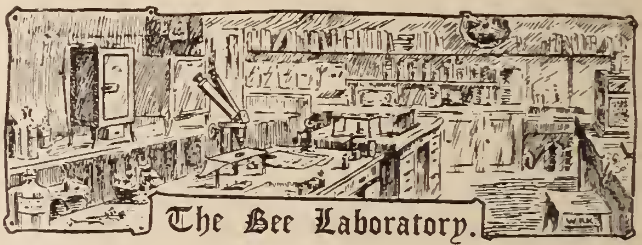

The Cage — glass top and
perforated zinc bottom
LIVE BEES
Travelling boards.
Your own address here.
The Carrier — showing two
"Royal Carriage" Queen Bee Introducing Apparatus.
Width between frames
CANDY THIS END.
OPEN
CLOSED
positions, closed and open, of exit.
Points to be pressed into frames.

Fig. 44


The Bee Laboratory.

POLLEN-MOULD, AND SOME OTHER BEE-HIVE FUNGI

By ANNIE D. BETTS, B.Sc.

It is seldom that any beekeeper spring-cleans his hives without finding more or less mould on the combs. This, if the stock is healthy, is usually of a pure white colour. Most of us have also frequently noticed the chalk-like plugs of dry pollen, overgrown and permeated by this white mould, which the bees, as the brood nest expands, remove from the combs and bring out of the hive.

This pollen-mould fungus (unlike the common fungi which attack our own "preserves") is an organism peculiar to its environment, and specially adapted to life in the hive. It is known as **Pericystis alvei.** Its exact position in the system of classification is uncertain, as it has not yet been sufficiently studied, but it is believed to belong to the natural order **Entomophtheraceae**; which includes, among others, the fungus **(Empusa muscae)** that kills house-flies in the autumn. (My readers may sometimes have noticed a fly stuck to the window-pane and surrounded by a whitish hale of the spores of this parasite).

Under the microscope **Pericystis alvei** is easily recognisable by its peculiar mycelium (Fig. 45, a), which is septate (jointed) at short intervals, many of the cells having thick walls which refract the light strongly. Each of these thick-walled cells or chlamydospores is capable of germination, and they are the means by which the fungus is reproduced (Fig.45, b).

Besides the chlamydospores, **Pericystis alvei** produces cyst-spores. If plugs of mouldy pollen be examined in the spring, here and there one will be found to be greyish. The grey appearance is produced by the presence of hundreds of small dark-green globular objects, each borne on two, three, or rarely four short dark-green stalks. These are the cysts. They contain, when mature, a number of transparent spherical spores (Fig.45, c). I have never been able to induce these spores to germinate (though further experiments are needed), and have had strains under cultivation that apparently always produce empty cysts; it is therefore quite possible that the cysts are degenerated organs. Once they may have been the sole, or at least chief, means of propagation; now they are superseded by the chlamydospores.†

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† For details of measurements of spores, etc., and development of cysts, see the author's paper in "**Annals of Botany,**" 1912. There are copies in the Library of **The Apis Club.**

Pericystis alvei is peculiar in its relation to temperature. At 90° F. the chlamydospores will not germinate; but they soon start growth when the culture is transferred to, say, 50° F. (It is not known what is the highest temperature at which the spores will just germinate; but it is probably about 80° F.) This species grows well on honey agar or gelatine, or similar media made up with decoction of pollen-clogged combs; but grows poorly and is obviously not "at home" on nutrient bouillon or bee-larva bouillon media. It is therefore impossible for **Pericystis alvei** to cause brood disease or even to start growth on pollen in the brood nest during the breeding season.

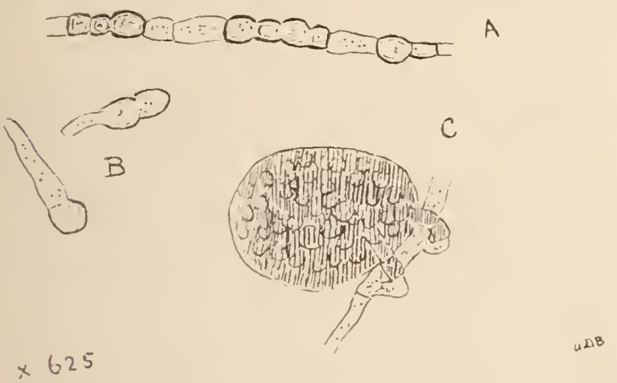

Fig. 45.—Pericystis alvei.

A = Hypha with chlamydospores.
B = Chlamydospores germinating.
C = Cyst.

We can now see that the life-cycle of this pollen-mould must run somewhat as follows. In the spring, when the bees clean out the combs, some of the chlamydospores are sure to be left behind in the hive, and a few doubtless adhere to some of the bees of a swarm when it issues. Arrived in the new home, the fungus is unable to germinate during the summer months owing to the high temperature that prevails; and it is only when the onset of winter and the formation of the cluster cause the temperature of the outer combs to fall, that growth starts. The cyst stage is reached by the spring; I suspect that the degree of dryness of the pollen-plug has something to do with the formation of cysts, but am not certain of this.

Pericystis alvei is thus merely a harmless "messmate" of the bees, and its presence in a hive is simply a sign that the combs on which it is found have not been covered by the cluster during the winter. It is, I fancy, commoner in single-walled hives, because in such the outer combs get colder during the winter.

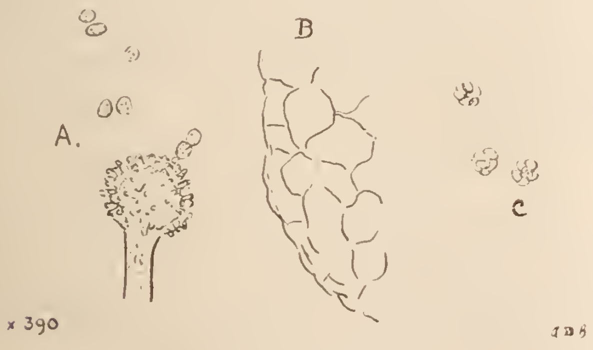

Fig. 46.—Aspergillus glaucus.

A = Conidiophore (with two sporidia still attached) and conidia.
B = Portion of perithecium-wall.
C = Asci.

There are several other species of fungi commonly found in hives. One or two of these are possibly, like **P. alvei,** specialised bee-hive fungi; some are only accidentally present, having been brought in by the bees from stagnant puddles, etc. Some others are ubiquitous, their spores being present everywhere. Of these, the commonest in hives is **Aspergillus glaucus** (Fig.46). This is the dark-green mould that frequently appears in jampots; and is common on combs that have been removed from the hive and stored, especially if they contain dead brood. Besides the green conidiophores (Fig. 46, a), **A. glaucus** produces yellow bodies known as perithecia (Fig. 46, b), containing several asci (Fig. 46, c), each of which encloses eight spores. When dark green or brownish mould is found, sprinkled with minute bright yellow specks, we may be fairly certain that we have to do with **Aspergillus glaucus.**

Those of my readers who wish for more information on these and the other bee-hive fungi are recommended to borrow "**The Fungi of the Beehive**" (**Journ. Econ. Biol.,** Dec. 1912) from the Library of **The Apis Club.** It may be remarked, however, that the twelve species there described do not exhaust the list even of the British bee-hive fungi; there are at least two or three other species which are occasionally found. There are also several kinds of yeasts present in fermenting honey and on pollen; but my studies on these are not yet sufficiently advanced to make a description of them possible.

As far as is known, none of these fungi or yeasts are pathogenic to bees or brood. It is, however, very probable that the presence of much mould in a hive is harmful. Bees often show symptoms much like those of I.O.W. disease after cleaning up badly-moulded combs. In this connection reference may be made to Turesson's work (cited in **British Bee Journal,** 1919, p. 545); he has shown that bees are poisoned if fed with honey containing mould. Obviously, however, such outbreaks would not be contagious; and it is consequently highly improbable that fungus-poisoning plays more than a very minor part in I.W.D.

It will be seen that the British list of hive fungi does not include any of the species present in the conditions known as "stone-brood" and "chalk-brood." Our immunity is probably due to our climate, these diseases being encouraged by ill-ventilated hives, and hot weather, such as prevails during a Continental summer, but is rarely prolonged in this country.

As the Editor truly says (in the October number, p. 106), a hive fungus is not necessarily pathogenic. I would go further, and say that very few of them are. Maasson succeeded in infecting stocks with "stone-brood" and "chalk-brood," by giving them combs on which the causal fungi had been induced to grow; the resulting outbreaks appear to have resembled those occurring naturally. There is, however, no evidence that any other fungi are pathogenic to bees, except in the indirect sense indicated by Turesson's work aforementioned.

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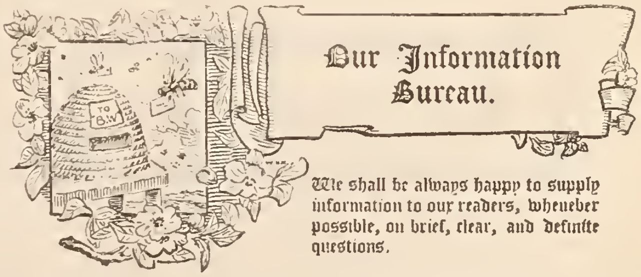

Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

RAISING QUEENS FROM LARVAE.

Q. Why should a queen raised from the egg be better than one raised from a young transferred larva? The difference in early feeding does not seem to me a sufficient explanation.

A. In transferring larvæ, the most careful queen breeder cannot say that his manipulation is a perfectly safe one to these delicate creatures. It does not seem to be devoid of harm, as evidenced by the fact (shown by Swiss practice) that good queens can be secured from young larvæ when these are removed undisturbed **in their**

cells by means of a suitable puncher, and transferred in this form to the usual wooden cell cups. This can not be applied, of course, to artificial combs, even with shallow cells, as has been adopted in our metal comb, at the suggestion of several friends. The wax comb, for the queen breeder, is justified therefore to remind us of a forgotten claim.

THE DEMAREE METHOD OF SWARM CONTROL.

Q. The methods generally described in our manuals for the prevention of swarming do not seem to be intended for the honey producer, but rather for the amateur beekeeper. The Demaree Method, we are told by American beekeepers, is ideal, yet strange to say, it has singularly failed in my hands. What is your opinion on this subject ?

A. It is rightly said that the beekeeper working for run honey and using large hives will be little troubled with swarming ; but since this is influenced by more than hive space, few are likely to escape its nuisance. The Demaree Method of Swarm Control is generally much appreciated by those who tried it on a large scale. As it is often productive however of queen cells in the original brood chamber, a better plan of swarm control is to leave the queen in the first brood chamber and to lift combs of **capped** brood to the second one, separated from the first by a queen excluder. The combs of capped brood are replaced in the bottom chamber by empty ones. In this manner the bees are discouraged from swarming, without being depleted in strength, and the augmented force of the colony is turned for honey production.

CULL HONEY.

Q. What is " Cull Honey ?"

A. This is, to the best of our knowledge, an original American term expressive of the lowest grade of honey, whether section or extracted. Amongst official grading rules of **The National Beekeepers' Association** of the U.S.A., which were adopted in 1913 at the Cincinnati Convention, the following rule was decided upon :— Cull honey shall consist of the following : Honey packed in soiled second-hand cases or in badly stained or propolised sections ; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour or " weeping " honey ; sections with comb projecting beyond the box, or well attached to the section less than two-thirds the distance around the inner surface ; sections with more than sixty unsealed cells exclusive of the row adjacent to the wood ; leaking, injured or patched up sections.

THE LANGUAGE OF BEES.

Q. Is not the noise referred to by a correspondent (p. 92) made by the drones ?

A. Whilst experimenting in November on the effects of temporary starvation on bees kept in an observatory hive, the sudden supply of food by means of a wick and a feeding bottle, at once resulted in the production of the " wood pigeon " sound. This took place in the presence of Mr. J. Herrod-Hempsall. Drones had departed long before.

◆ ◆

The Apis Club

Port Hill House, Benson, Oxon, England.

Organising Secretary : A. Z. ABUSHÂDY.

Associate Secretaries: GILBERT BARRATT, F. M. CLARIDGE, JULIAN E. LOCKWOOD, ROBERT MANLEY, & JOSEPH PRICE.

(1) Origin.

The institution of **The Apis Club** is traceable to the universal hope of an international brotherhood movement to which a suffering world, bleeding from so many wounds, is at last looking as the only saviour of culture. Such an intercommunal friendship aiming at the security and advancement of civilisation, to the general benefit of the human society, can only be the outcome of the united efforts of corresponding sections of different nations,whether great or small.

However humble the position of apiculturists may be in one Country or the other, collectively they are not insignificant in their influence direct and otherwise. Their interchange of knowledge and mutual understanding can only be productive of a lot of good to bee culture as a science and a craft.

The " Apis Club Movement " was inaugurated in June 1919 by the founder of this magazine who was encouraged towards this ideal by several leading apiarists, the ability and strength of whom have undoubtedly made him forget to some extent his own weakness.

(2) Principal Objects.

(a) Enjoying the patronage of the British Bee Community, whatever the measure of such support at any particular time may be, it is of special interest to the **Club** to be engaged in the educational and practical development of Modern Bee Culture in the United Kingdom, both independently and by co-operation with existing societies and institutions, the creation of a spirit of concord amongst which is sorely needed.

(b) Amongst the principal objects of the **Club** is the stimulation and conduct of research work in bee culture. That such work is something more than laboratory investigations and is by no means limited to the subject of bee diseases is a fact that should be recognised. The difference between much of the present teaching of bee culture and the ideal that should be aimed at is as much as the difference between imitation and original investigation.

(c) The creation of international scholarly relations amongst progressive apiarists in all Countries. This is bound to result in the exposition of the goodness in every community, to the ultimate advantage of all in several forms.

(3) Constitution.

In its state of organisation the **Club** consists provisionally of :

(a) **Members.** The membership being open to all practical apiarists everywhere, as well as to all lovers of the Honey Bee.

(b) **Fellows.** Fellowship of the Club is to be limited to distinguished researchers in apiculture, whether members of the **Club** or not, so as to encourage experimental work aiming at the advancement of beekeeping.

Clearly, it is not for the provisional organisers of the **Club** to lay down rules and articles of association, except as proposals to be laid before the Annual Meeting of the **Club** Members. Their function is to safeguard the existence of the **Club**, and to create a powerful co-operative organisation, which should democratically choose its own rules as well as its officers and headquarters. Suffice for the founder of the **Club** at present to guarantee the members against any liability other than their membership fee and what they choose to contribute to the Research Fund of the **Club** and the Educational Fund of THE BEE WORLD.

(4) Why Should You Join The Apis Club ?

(1) Because you contribute by your moral support to the realisation of the educational and co-operative aims for which it has been instituted.

(2) Because you become a joint partner with a full voting power in shaping in addition this official organ of the **Club**, which is owned as a public bee magazine by beekeepers everywhere, through membership of the **Club**.

(3) Because you get in touch with different sections of beekeepers by correspondence and association, and gain the consideration of your fellow-members (both at home and abroad), whether manufacturers, breeders, retailers, or honey producers. Such a consideration is to be appreciated as a form of co-operative encouragement.

(5) Why Should You Support THE BEE WORLD Educational Fund ?

Because such a periodical, which is disposed of at 400 % below the cost of production, for the sake of serving its educational aims, cannot prosper without the unbiassed and unselfish support of the whole Craft at home, and of international apiarists abroad.

Were organised beekeepers to contribute individually or through their Associations, in whatever possible degree, the status of the work would soon be enviable, and those who devotedly shape the success of the scheme, should ultimately find the fruits of its success their own.

It is a logical aim that the **Club** should develop **independent** of the fostering of a single Association or a single Business House. And to fully achieve its aims, nothing short of the whole-hearted co-operation of all the beekeeping organisations in this Country (apart from beekeeping institutes abroad), as well as the mass of the Trade is needed.

Can you give or be the means of giving a regular donation to the Educational Fund of this Magazine for the period of three years? Can you secure a regular advertisement for it ? Can you introduce a dozen new members who are similarly enthusiastic to **The Apis Club** ? This is the only form of tangible sympathy.

(6) Prospective Policy.

Leading members of the **Club** are anxious to remind us of the many forgotten promises of support presented to us in the past, and that we should not therefore rely too much on present promises.

We are keeping this kind advice in mind. Yet we cannot help thinking that a purely public and a non-party work of this character cannot be represented by a magazine of a lower standard. In fact, THE BEE WORLD in its present form is still in our eyes an infant, although our good friends think more than that of it. Assuming that it is a rapidly growing child, it will need an appreciable amount of nourishment-in the form of literary contributions by international apiarists every where; and above all, in the form of financial contributions to its educational fund.

The history of sacrifice of personal interest in the development of this public work is almost unbelievable. It will serve no good purpose to narrate it. Members of the **Club** are entitled to investigate the facts for themselves. Suffice here to summarise the situation as follows :

(1) The Founder of this magazine accepted for himself as an established policy its editing gratuitously and the negation of any right of control by more than a single vote. He made the reservation however that should **The Apis Club refuse** to publish it in conformity with its principles he should be entitled to do so.

(2) Favourably depending on the support of the Craft, he was led to seek the temporary and unconditional financial assistance of business colleagues, who have since then far exceeded by multiples their original promise of support, with the consequent crippling of their business. The founder of this magazine had ultimately to bear and is still bearing an appreciable part of this heavy burden, and is morally responsible for their future compensation.

(3) Several wealthy members of the Craft, who, between them, could have easily taken this public work under their wings, have remained mere spectators. And whilst acknowledging with gratitude the unselfish support of decent sympathisers from different sections of beekeepers—people who are above sectional prejudice and party call, we cannot hide the disgrace of a band of opportunists, who, on being shocked by the unprecedented public character of our work, which is much against their selfish interests, and lacking both the courage to speak openly in the Bee Press and the cowardice to be silent, have organised an unworthy campaign of misrepresentation in order to counteract our services to a cause which they profess to be their own !

(4) Were the founder of this magazine anxious to issue it for his own gain, there would be no obstacle whatever in his way, since in fact the **Club** is still unable without his assistance to publish it, but he refuses to take advantage of the position ; and is still sticking to his desk, despite indifferent health and excessive worry, until it is the kind wish of the members to relieve him of this thankless task. Again, he has been the means of inducing the co-directors of Messrs. Adminson Ltd. to complete their patronage by unconditionally accepting to pay, to the best of their ability, all deficit resulting from this work without any return whatever, until the Beekeeping Societies in this Country and the rest of the Trade can shape themselves into something better than good apologists of narrow vision.

Doing the hard work of at least three men, amidst endless anxiety, we can only promise that we shall not leave our task until we are hopelessly crushed under the eyes of idle " sympathisers " and critics, or until the scheme is handed triumphantly to greater men.

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The Bee World.

THE OFFICIAL ORGAN OF THE APIS CLUB.

Edited by A. Z. ABUSHÂDY, F.R.M.S.

With the collaboration of : the Rev. John Beveridge, M.A., B.D., E.B : S.B.A. ; Miss Annie D. Betts, B. Sc. ; A. F. Harwood ; J. Herrod-Hempsall, F.E.S. ; W. H. Simms, B.B.K.A. ; and R. Whyte.

Literary Correspondence : Literary correspondence should be addressed to the Editor, accompanied by a stamped addressed envelope when a reply is expected. In view of the public character of this magazine and the almost overwhelming occupation of the editor, he relies on the co-operative spirit and good nature of correspondents in avoiding on the one hand unnecessary correspondence, and in helping on the other hand to reduce the postal expenses of THE BEE WORLD and **The Apis Club** which are exceptionally heavy.

Having regard to the limitations of our space, our able contributors will greatly assist by considering 500 words a maximum limit for any single contribution as an article. Letters to the Editor for publication should be very brief.

Business Correspondence : The Manager of THE BEE WORLD will be pleased to forward a list of charges for displayed advertisements to members of the Trade, and to reserve spaces for them on application.

The Supply of the Magazine : THE BEE WORLD is supplied at present only to members of **The Apis Club** at an annual membership fee of 7s. 6d. per annum, payable in advance. **Prospective members can join the Club at any time.** Back issues of THE BEE WORLD (second-hand or otherwise) as well as additional copies of the current number may be obtained, when available, by any member of the **Club**, on applying direct to its offices, at the cost of 9d. per copy, post free. Membership of the **Club** provisionally embraces a collective control membership by any Association, the secretary or members of which would be entitled to apply for additional copies (at the above mentioned price), although the supply of the number of copies asked for cannot be always guaranteed in view of the cost of production.

The organising Secretary of **The Apis Club** has again to rely on the consideration of members both for his time and for the finance of the **Club** in assisting him to execute his multiple duties.

Special Prepaid advertisements by members of THE APIS CLUB are inserted at the rate of one penny per word ; minimum : one shilling. For non-members ; 3d. per 2 words ; minimum : two shillings. For box number 6d. extra. Advertisements must reach us not later than the first week in each month for insertion in the corresponding month's issue.

VACANCIES FOR PUPILS—on an old established bee farm where work is done on a very large scale.—Box 27, B.W. Office.

INSURE AGAINST DISAPPOINTMENT—by getting your queens and bees from a place where I.O.W. has **never** existed. Italian queens and 3-frame nuclei, hardy and vigorous, bred for years in a cold North climate. List free.

IRISH HONEY—gathered principally from bramble, clover, and wild raspberry ; well ripened and matured ; in tins 7lbs. to 56 lbs. each. Prices on application.

5% discount to members of The Apis Club ordering bees or honey. Members when ordering are requested to forward their cards.—S. Crawford, Apiaries, Castlederg, Co. Tyrone, Ireland.

CYPRIAN BEES—For the finest strain of Cyprian bees which have won for themselves an international reputation apply to: Mihran G. Dervichian, Nicosia, Cyprus.

CONNECTICUT QUEENS—Highest grade three-banded Italian Stock guaranteed to give satisfaction. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease resisting qualities. Select Untested Queens, each: 1 dollar 25 cents. ; 6: 6 dollars 50 cents. ; 12: 12 dollars ; 50 : 47 dollars 50 cents.; 100: 90 dollars.—A. E. Crandall, Berlin, Conn., U.S.A.

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County of Southampton

Agricultural Education Committee

Horticultural Sub-Committee

WANTED, TRAVELLING STAFF TEACHER OF BEE-KEEPING, to take up duties shortly. Conditions of appointment and application form sent on receipt of stamped addressed foolscap envelope, to be returned by the 15th March, to D. T. COWAN, Director of Education, The Castle, Winchester.

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The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their school or nationality, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

Publishers:

The Apis Club, Port Hill House, Benson, Oxon, England: An International Institute for the service of Modern Apiculture, and for fostering a genial spirit of scholarly brotherhood amongst bee-keepers of all countries, with the co-operative object of promoting their educational and material interests.

⁂ Membership of the **Apis Club** is open to all practical apiarists everywhere, as well as to all lovers of the Honey Bee. Annual Membership Fee: 7s. 6d., and includes free delivery of this Magazine, which is issued only to members of the **Club**.

Vol. I. No. 8. JANUARY, 1920. Monthly.

Editorial.

THE NEED FOR LEGISLATION.

The need for legislation for bee diseases is self-evident to the touring expert, to the victimised beekeeper, to the student of bee diseases, to the bee journalist who constantly feels the pulse of one or more sections of the Craft, to the public bee man who has his heart in the industry, and to the honest business man who values his reputation.

It is feared and semi-opposed by those who have no confidence in the elaboration by the Government of a truly constructive measure, and in the methods of its administration.

It is totally opposed, with few exceptions, by selfish commercial people who do not care twopence about the standard or the prospects of the Craft.

Let us repeat again that we do **not** believe in legislation which is not fundamentally educational, which can punish but cannot teach, and which does not heed scientific research.

Thanks to those who agitated for years and have doubled their energies recently, the Government appears at last to have realised that their Re-stocking Scheme needs supplementing. But we sincerely hope they will not go to the other extreme and assume a dictatorial position. They have to protect the industry against the wilful criminals, to educate the ignorant, and to support those who are doing their utmost to elevate the position of the Craft.

As a first step, a Conference of scientific beekeepers should be convened by the Government to define the present results of investigations on all bee diseases. A second step is the creation of a Conference of representative beekeepers—representative of beekeeping societies and institutes, of business houses, and also of non-organised beekeepers. The Government have only to make an announcement well in advance and to give it decent publicity, when beekeepers, on the whole, will not fail to act upon it. Those who do not care to respond are not worth considering. With this Conference of representatives the Government will profit by a discussion, and will gain by asking the Conference to formulate constructive suggestions with the approval of their constituents. In this way a helpful measure, in conformity with the wishes of the majority of beekeepers, will be created and will operate smoothly. The Government may take the responsibility for doing what they please without consulting the Craft; but if they wisely decide on consultation, this ought to be something real and sincere.

INTENSIVE AUTUMN BREEDING.

If we have to find consolation and satisfaction in the views of eminent leaders of 30 or 40 years ago, who happen to support our opinion, instead of considering the weight of modern research, we calculate that we shall not be rendering ourselves and others a good service. The greatness of such men as Cheshire, Langstroth and Quinby rested on the fact that, above all other qualifications, they were original researchers, tolerant of criticism, and ready to modify their views according to the testimony of careful investigation. None of them was specially fascinated by quotations; their authority was founded purely on patient observation and clear reasoning.

Since the days of Cheshire, scientific research on malignant dysentery has clearly demonstrated both in this Country and the U.S.A. that young bees are comparatively resistant to Nosema Disease and to the undefined types of I.W.D. Of what use is our rehearsal of this collaborated discovery, unless we care also to apply it in practice? We know that the greatest mortality from these diseases occurs chiefly during the "resting" season when breeding is at a standstill. Is it not logical that we should have a large predominant force of autumn bees, not only to insure longevity of the colony, but also to introduce the comparative natural immunity to diseases to which old bees are more susceptible? Had we held no other views on the subjects of autumn management and wintering, there would be some ground for criticism, but we have advocated the system of intensive breeding by means of the brood-hatching chamber, have emphasised the value of heat preservation, have recommended the indoor wintering of stocks as well as nuclei on special lines, the elimination of exhaustive foraging during autumn breeding by going so far as to advise the administration of water to the bees within the hives, the temporary supply of combs filled with artificial pollen and thick syrup until capped stores are supplied later; so there is no question of advising a practice that will lead to " more power being taken out of the old lives than is put in the new."

There is no hope of a true advancement in the science of beekeeping unless we regularly review our methods with open minds in the light of research work.

THE ENTRANCE SHADE. Unless we are very much mistaken, there is a possibility of an early spring in England. Bees are beginning to fly freely, with the consequent risk of spring dwindling. Under such conditions, it is advisable to remove (at least temporarily) the entrance shades, should they be in use, in order to prevent the flying bees from being puzzled on returning home, since it is the general habit of bees to reach the hive door by flight, especially in comparatively cold weather, during which their accuracy of demarcation is more imperfect than in favourable weather, when their frequent precision, except in a large apiary, is remarkable. This temporary state of impoverishment of their instinct is no doubt incidental to wintering conditions.

EARLY POLLEN SUPPLY. Too early pollen supply within the hive by means of inserting an outside comb containing such stores is not advantageous if liberally and clumsily done, especially should it become wet and mouldy. To stimulate early breeding amongst hardy bees that can endure a flight at a temperature of 48°-50° F., close outdoor pollen supply is much preferable, since only those bees that are capable of taking foraging as well as cleansing flights at such a degree of temperature will get access to it and the risk of metabolic poisoning arising from prolonged confinement is obviated.

DYSENTERIC BEES. Favourable unseasonable weather, even of short duration, during winter, is generally viewed with apprehension by orthodox beekeepers. It may hit their pockets to an insignificant extent, but it considerably helps to improve the prospects of dysenteric bees, until re-queening becomes a possibility early in the spring. On the other hand, the prolongation of such weather may mean the avoidable starvation of many colonies which happen to be receiving no attention, or the stores of which in relation to the rate of consumption has been miscalculated.

Original Contributions.

Originality is the one thing which unoriginal minds cannot feel the use of.—J. S. Mill.

The Domestic Economy of the Hive.

By H. M. STICH.

How many times has the phrase—The Economy of the Hive—been used in writing and discoursing about the Social Bees? Yet most writers take a very narrow view of its meaning, and confine themselves to the consideration, description and elucidation of the Animal Economy of the Bee. So far as my knowledge goes no attempt has been made to investigate the Domestic Economy of this insect; or if any such attempt has been made I am ignorant of it. I propose to discuss this matter in some detail and to bring before your notice some new matter, or rather to corelate existing information and to deduce therefrom something of use and interest.

The late Frank Cheshire in his admirable work on bees—two books which would well merit a second edition in view of the considerable demand for copies thereof—reminds expectant novices in beekeeping that the major portion of that which any colony of bees, be it weak or strong collects from the flowers of Spring and Summer is required for its sustenance. Few people realise, says Mr. Cheshire, the enormous quantity of food required to rear bees, and this author mentions that a British Standard Frame filled both sides with brood would contain 2lbs. of sealed larvæ. This brood, on completion of metamorphosis, would hatch out just one pound of bees, for whose creation 12lbs. of honey and much pollen were consumed. Further than this Cheshire did not push his investigation.

Now, the foregoing data I will assume for my purposes to be correct, although I do not see how Cheshire arrived at the figure for honey consumption in brood rearing. It certainly was not the result of any simple experiment. Can we, armed with this information, carry the investigation a little further, and ascertain just what that major portion is, which a colony of bees consumes that it may live and prosper. It must be large, for otherwise we should have found Nature at fault. A most serious conclusion to come to and shunned by all educated minds. Everything in Nature endowed with life provides for itself. Now if a colony of bees can provide its owner with a surplus of 300 lbs. of honey—a figure that has several times been surpassed—and possess sufficient food to carry it through the Winter and Spring to the next harvest, it must have done far more work than were necessary for its existence. But the reply to this is that the 300lbs. taken from the colony represent only a small fraction of what it actually collected in the fields—not more than 20% and probably not more than 10%. So we see that, after all, this law of self providence holds just as well for the bee as for any other insect, animal or plant. I hope to show that the superfluity or over-production on the part of the bee is more apparent than real.

Let us try to give values to the various items which go to make up the bees' Domestic Economy Account. Unfortunately the Bee Republic has no Chancellor of the Exchequer whom we could approach for useful information, and, moreover, it is so vast, despite its minuteness, that we cannot appoint ourselves temporary chartered accountants. It will be necessary therefore to make a few assumptions which will enable the income and expenditure to be calculated. Let me here state that the accuracy of what follows is only very approximate. It could not very well be otherwise in the nature of things. To take two of the most important items on the expenditure side, the Death Rate, and the Rate of Ovipositing, we can never arrive at the true values of these at any given period; much less determine with any degree of approximation the rate at which both of them change with respect to time.

We will look into the Expenses Account first. In order to simplify the calculations which are required for determining the consumption of food in the hive for raising brood, I will assume that the two principal factors—the death rate and the rate of ovipositing—vary uniformly, i.e., that they are straight line functions of time as the mathematicians say. This is probably far from what actually takes place. From this it follows that the numerical strength of the colony will also follow a straight line law, which also will enable us to avoid mathematics.

Let us assume that February finds the colony with a population of 15,000 bees and a queen. We will further assume that brood rearing has just commenced, and that this colony is destined to build up to a population of 60,000 by the beginning of May (sufficient to well cover ten brood combs and ten shallow frame combs). We will also suppose that this force will be maintained constant for two months, and that the population thereafter decreases steadily to 15,000 by the end of September. One other assumption will have to be made. We must assign values to the Death Rate to enable the Rate of Ovipositing to be determined. Let us assess the former at 1,000 per day during the months of May and June and let us assume that the death rate rises uniformly from zero in February and falls again uniformly to zero in October.

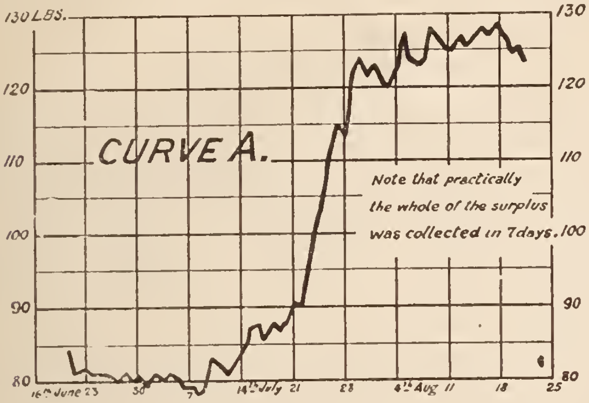


Fig. 47.

Between February and May 45,000 bees have to be produced to bring the population up to summer strength, and a further 60,000 are required to make good the death rate (average death rate = 500 × 4 × 30 days). A total of 105,000 eggs are therefore required of the queen, an average of 875 per day. During May and June the queen has to keep pace with the maximum death rate of 1000 per day, being a further 60,000 eggs, which brings the total production of bees up to 165,000. Between July and October the death rate according to our assumption is going to fall from the maximum of 1000 per day to zero, making the average 500 per day. The period being three months or 90 days, we have 45,000 deaths during late Summer and Autumn. Our hypothetical colony is however destined to drop to 15,000 individuals from 60,000, and the difference being equal to the death rate, no eggs are required of the queen. I can imagine someone saying. " What nonsense, I have brood in my hives right through the season until October." Quite true, but as we cannot hope to ascertain exactly what is going on every day, and to what extent it is going on, much less carry out the intricate and laborious calculations had we even the figures required, we might as well simplify matters for ourselves by creating a simplified activity for our colony which will not, *in toto*, differ too much from what actually takes place in Nature. If we make the total brood reared throughout the year conform to what a colony of similar strength might from experience be reasonably expected to do, it matters little for the purpose of our argument—the comparative significance of income, expenditure and surplus—how we spread the brood rearing over the season. There is one more item which for the sake of completeness I will include, but, as it is of a much smaller order than the probable errors in the various assumptions, it might quite well have been omitted. It is the question of drone brood. We will assume that our colony raises 1000 drones and that their production and maintenance cost in food the equivalent of twice that required to raise a similar number of workers.

The grand total production of bees in this colony between the months of February and October will then sum up to 167,000. Twelve pounds of honey are required, as dated above, to produce 1lb. of bees, say 5,500 young bees. We therefore arrive at the total consumption of honey for the active season which is 167,000 × 12 ÷ 5,500 or 365 pounds of honey approximately.

So much for the debit side of the Domestic Economy Account of our little colony of bees. Let us see what such a stock will do towards meeting its immediate and future needs. Greater audacity is required in making the necessary assumptions in this case than was called for when we were dealing with consumption.

Last Summer I had a colony of bees mounted on a weighing machine, and the readings of the latter recorded at intervals of 24 hours are reproduced graphically herewith. Curve A represents the daily weighings of the hive and its contents. When I first started recording the weight of this colony, I became aware of wide and rapid variations whose origin I was, at the time, unable to determine. With the continuance of these oscillations in the readings and my continued inability to explain them, I took a series of readings every two hours commencing at 7 a.m. and continued until 7 p.m. in the hope of being able to learn something. The weights thus obtained are reproduced on Curve B.. I found the cause of the variations and many more interesting facts besides from this Curve A. A study of the movements of the pointer of the weighing machine, coupled with the state of the weather and the activity of the bees enabled me to determine with accuracy the strength of the field force. The colony under observation whose varying weights are reproduced on the two diagrams A. and B. had a regular and constant field force of 2lbs. weight, say 11,000 bees. A small colony you will say. Yes, but I am not concerned with attempting to create wonder in you at some new record, but rather with drawing your attention to what

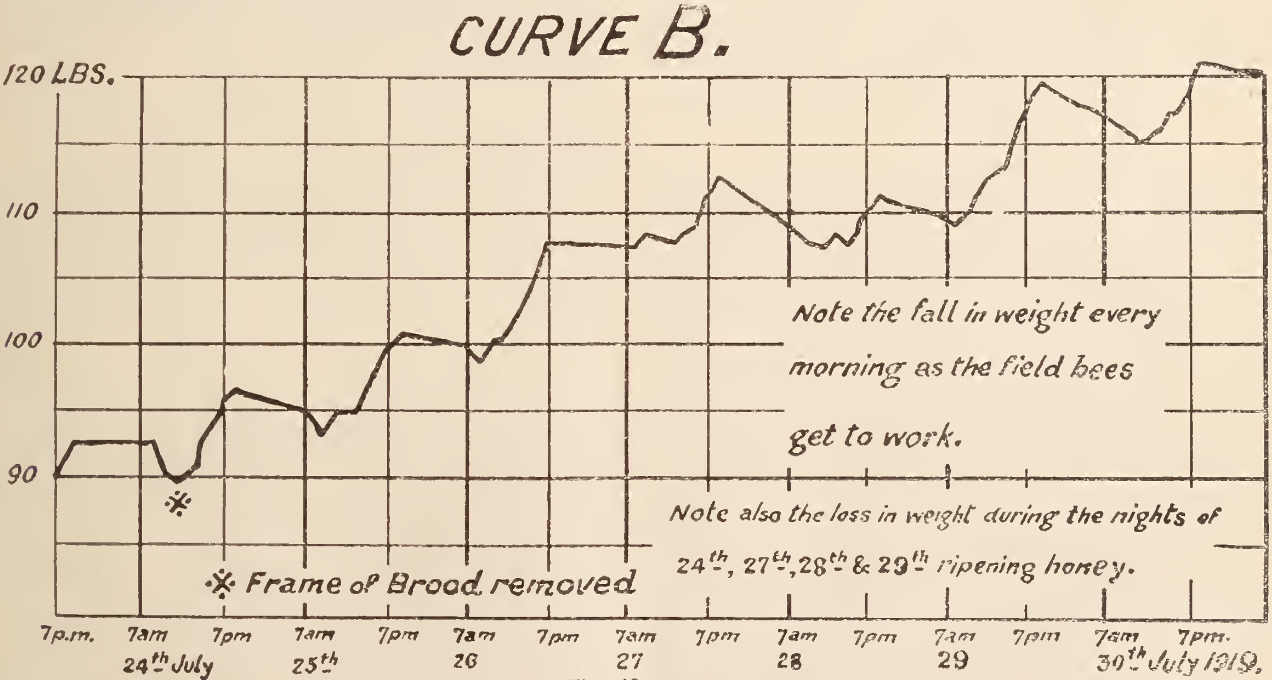


Fig. 48.

can be secured by indirect observation. To know that the foraging force of your colony of bees can be determined—and very accurately too—by a few readings of a weighing machine, or that the size of a swarm may be ascertained while it is still in the air is certainly of more than passing interest. And for a person who has little time to spare, regular daily readings will enable him to detect immediately the fact that a stock had swarmed without being told by one who had seen it issue or cluster.

But to return to our problem of determining what our imaginary colony of 60,000 bees, 1000 drones and one queen might be expected to do during a honey flow as represented by Curve A. We will say for the sake of argument that these 60,000 bees are housed on ten standard brood combs and 10 shallow frames. To fully cover these frames 6lbs. of bees are required, say 33,000. This leaves 27,000 bees free to fly to the fields. 7,500 bee journeys are necessary to collect a pound of nectar containing about 97% of water, most of which is evaporated in the hive. Assuming that the honey produced contains 20% of water, approximately 20,000 bee journeys are required for the gathering of the nectar necessary for the production of each pound of honey. If each field bee makes five journeys per day on the average, 4,000 bees will collect sufficient nectar every day to produce one pound of honey, provided of course it is being secreted in sufficient amount. The 27,000 field bees of our fictitious colony will, during an abundant flow, collect nectar to make 6¾ lbs. of honey every day that the flow lasts. Let us assume that the secretion of nectar available to our bees be somewhat as shown on diagram C.

DIAGRAM C.

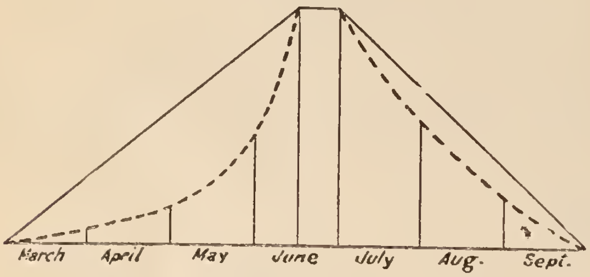


Fig. 49.

In other words that the flow starts from zero in March, rises to and remains a maximum during a fortnight at the end of June, and drops to zero again by the end of September. This curve must not be compared with Curve A. The latter represents surplus, or income, less consumption. If the weighing machine could be made to record the gross income, it would be a still more useful accessory in the apiary! If we make the maximum height of Curve C. represent an income of 6¾lbs. of honey per day, then its area will represent the total honey collected by a force of 27,000 field bees during the period. But we have not the maximum force available throughout the full period of six months. We must therefore modify Curve C. somewhat as shown by the dotted lines to allow for the varying number of field bees. The area of this curve as modified obtained by means of a planimeter represents a total income of 450lbs.

Now what have we obtained from this hypothetical hive of bees under the hypothetical conditions sketched out for it? As I have already shown it has collected a total of 450 lbs. of honey. From this falls to be deducted 365lbs. consumed in building up and maintaining the colony during the active season, and 30lbs for the ensuing winter and early spring, making a total of nearly 400lbs. To the figure of 450lbs. of income has to be added the capital with which the colony started the season in February and used for brood rearing from February until the advent of flowers. This will amount to about 20lbs., 8 or 10lbs. at the outside being sufficient to carry the colony through to the beginning of February. We have therefore 470—400 = 70lbs. as being the surplus, the legitimate property of the owner of these bees which is a little more than 15% of what the colony obtained from the calyces of the flowers as a reward for its services to the plant kingdom as a pollinator.

Such is the domestic economy of the hive bee, or as close an approximation to it as I can arrive at with the knowledge to which I have access, and with the experience I have been able to gain from my own observations. I place it before readers of THE BEE WORLD, not as incontrovertible fact, but as a stimulant for thoughtful reflection and as a small contribution towards the sum total of our knowledge of the Honey Bee.

What Makes Bees Swarm ?—II.

By ANNIE D. BETTS, B.Sc.

In a former article a theory was put forward that the consumption of royal jelly by the worker bees is the cause both of the construction of queen cells and of the issue of the swarm. It was pointed out that the effect of royal jelly on a worker might be expected to be an arousing of normally-dormant instincts—in a nurse bee, of the ancestral bee's methods of brood-rearing; in a forager, of a state of "positive heliotropism," which appears to be identical with the mating-flight impulse. It was shown that the theory accounts for the sending out of scouts, and for the queen ceasing to lay before swarming.

Since that article was written, it has come to the writer's knowledge that a similar theory has been published by Gerstung, in his book **"Der Bien und seine Zucht"** (see **B.B.J.**, 1919, p. 566). He attributes supersedure and swarming to an excess of royal jelly, caused by the presence of more nurse bees than are required to feed the brood then in the hive, combined with a plentiful honey flow. As we are promised a translation of Gerstung's theory, in a future issue of the **B.B.J.**, by Mr. G. G. Desmond, it will suffice to say here that Gerstung's theory differs from the writer's mainly in maintaining that preparations for swarming are an attempt on the part of the nurse bees to get rid of their surplus of fats and proteids; that adult bees do not eat royal jelly; and that the act of swarming is the result of an (unexplained) impulse to seek a new home, where bees and queen alike will find an outlet for their energies, for which there was none in the old hive. The writer, while wishing to give credit for priority where it is due, claims that her theory is an improvement upon Gerstung's, as it explains more hitherto unexplained facts.

There are several other points, not mentioned before, in favour of the royal jelly hypothesis:

(1) When a stock swarms, some foragers keep on steadily at work as usual. They have not eaten enough royal jelly to produce the swarming impulse.

(2) Cutting out queen cells does not always stop a stock swarming. Naturally not; it, if anything, increases the surplus of royal jelly.

(3) Separating off part of the brood nest with queen excluder often results in queen cells being built there. Young bees appear to stay on the comb on which they were hatched; so, if the queen cannot visit them, and they therefore have not to feed her and numbers of young larvæ they will soon have a surplus of royal jelly. This they will eat themselves and will be thereby impelled to build queen cells.

(4) Casts come out in all sorts of weather. The majority of the bees are nurse bees, and a great deal of royal jelly is therefore being produced (in proportion to the population), also there are no larvæ to feed. Hence the young foragers that constitute the cast get a large dose of jelly and become extra strongly positively heliotropic in consequence, so that the cast issues even on a dull day.

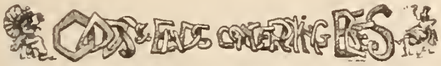
(5) When a prime swarm is delayed by bad weather, royal jelly ceases to be in excess; and if the bad weather continues, a stage is reached where there is only just enough for the brood, so that even the nurse bees cease to eat it themselves. As a result, they lose their primitive brood-rearing instincts, and then probably fail to recognise the queen cells they have themselves built. These are therefore treated as "foreign bodies," and torn down.

One or two difficulties suggest themselves. Why, when a stock swarms, does its neighbour so often do so also? Can it be that scouts go into neighbouring hives, causing a disturbance, so that some royal jelly gets diverted from its proper destination—larvæ, and is eaten by the adult bees? What, again, is the connection between the act of swarming and the undoubted attraction which the queen has for swarming bees?

It will probably also be asked: If feeding with royal jelly makes forager bees, drones, and the virgin queen positively heliotropic, why does it produce no such effect on a laying queen? The answer is, that the laying queen, like the nurse bee, is by nature negatively heliotropic. Why, we cannot at present say; probably because of some peculiarity of their internal chemical processes. When the queen is not in full lay— as for example in early spring, late autumn, and when accompanying a swarm—this tendency is in abeyance; if while in this state she is fed with royal jelly, she becomes slightly positively heliotropic, and leaves the hive for a flight, or at least for a walk on the alighting board. That she does do this at the times specified is known (**B.B.J.**, 1919, p. 557). After such an airing, her impulse to seek the light has spent itself, and further feeding with royal jelly merely causes her to lay eggs. This is a reasonable supposition, as it is known that in many of the lower animals positive heliotropism is changed into negative, by a more or less prolonged exposure to light. This fact may also have something to do with the forager's rythmical returns home at more or less regular intervals of time; but this requires working out, and the writer does not propose to go into it at present.

It has been stated that the nurse bee is negatively heliotropic. This is proved by the observation that **young bees can fly three days after emerging from the cell** (**B.B.J.**, 1916, p. 253); that they do not do so must therefore be due to a preference for darkness. They also display this preference (as every beginner knows, to his or her discomfort) by creeping inside the beekeeper's clothes; and, if brought indoors and dropped on the floor, will always walk away from the window, instead of going towards it, like the forager, which is slightly positively heliotropic.

It is the writer's opinion that there is a great unexplored field for research open to anyone who will study the "tropisms" of the bee—her automatic responses to light, heat, gravity, and other natural forces. We are far too apt, as our Editor has truly said, to attribute a human mind to the bee; and the attempt to study her as an automaton, even if it be an exaggeration in the other direction, cannot fail to throw much light on her habits, and to correct many errors in our present beliefs.



By R. WHYTE.

TEMPERATURE, WEIGHT AND MOVEMENT OF A COLONY.

It is amazing the amount of statistical and technical information the U.S.A. Government Depts. issue. The Special Bulletin (96) dealing with experiments conducted by Burton N. Gates, Ph.D., Bureau of Entomology, Washington, is of real live interest to beekeepers. The changes in temperature and weights recorded were taken over a period of 11 months, and the number of observations amount to many thousands. For use during these observations a ten-frame hive of five storeys was placed on scales that registered to a sensitiveness of 10 grams. Seven incubator type thermometers were inserted, some through the cluster and the others at various points.

The records made throughout the year are interesting; particularly so those relating to changes in weight and temperature during winter. The fluctuations in weight recorded day by day are sometimes very great, a variation of 130 gr. loss in one case, to an increase of 40 gr. in another being recorded. A more consistent and useful reading is found in taking the monthly averages. For instance, the average daily consumption of stores in November was 53.2gr. For February, it was found to be only 30 gr. daily: while for the entire winter the consumption was found to be 43.5 gr. per day.

The observations made with the cluster during winter gave curious results For instance, it was found that the temperature in the centre of the nest increased as the temperature outside decreased, this because of the bees huddling closer together as the weather grew colder. The curvature readings showing the **highest** readings within the cluster occurring simultaneously with the **lowest** outside and vice versa.

When the queen commenced to lay in March it was found the temperature became practically constant. It was also found that the instrument placed below the frames recorded almost identical figures with the one outside the hive. The temperaure in brood nest registering up to 91.76 deg. F.

With regard to the movement constantly taking place in the winter nest I will give this most interesting description in Mr. Gate's own words. "As the writer watched the cluster, the head of a bee would gradually appear from below the bees forming the shell of the cluster, Finally this bee emerged and took her place with the others on the outside. Similarly bees were frequently seen to dissapear into the mass. The behaviour was in no way general, but apparently was going on constantly and gradually. The phenomenon was repeatedly observed under all manner of conditions and at different times of day and night. By carefully arranging the covers so that it was unnecessary to remove them, and thus cause a jar, it was proven that this behaviour is normal, and not the result of a disturbance of the bees. It must be concluded, therefore, that in this way the same bees may not be exposed to the outside cold for a long period. So long as they are able to keep up their own body temperature they remain outside; but when chilled they pass into the interior."

RUDIMENTARY QUEEN CELLS.

The alert beekeeper is continually coming against matters that our text and other books on bees leave unexplained. The other day when looking over some brood combs, I came across several with what I may call "rudimentary queen cells" built on their face. Sometimes the novice, aye, and the beekeeper of several years experience, is led to think—from his actual text book teaching—when he sees these immature cells, that his bees are preparing to swarm. More particularly perplexed is the beekeeper in finding that these cells are almost invariably formed by newly hived swarms the first week or two after hiving. Just why these beginnings of queen cells should be made by the bees is not clear. The beginner thinks his swarm is going to throw out a swarm, thus causing him to watch his colony closely for this. Others are led to think the queen is being superseded; but the fact remains that beyond being formed and drawn out a quarter to three-eights of an inch, these cells are never completed. I have found these little queen cups formed on combs by quite weak swarms—casts, as well as by strong colonies.

Curiously enough I had to explain the best I could this matter to a lady who had taken up beekeeping enthusiastically last season and who watched quite a time for the unexpected swarm. I had to explain the difference between these and fully formed cells, actually built for swarming, or, later on, for supersedure; this latter remark leading to quite an explanation as to how and when bees do their re-queening. With me I find this matter is almost invariably attended to by the bees after the clover flow is over.

SUPERSEDURE QUEENS.

My lady friend, as above, was also critically anxious to know why I did not agree with those teachers who advise periodic re-queening. With me a queen should be allowed to remain mother of a colony so long, and **only** so long, as she retains high fecundity; as prolificacy, not age, should be our test every time in this matter. If queens are wanted for the eggs they lay, then power of production, not age, is the rule to follow. If queens are well bred—that is produced under right conditions and from queens that themselves were well bred and prolific—we can quite well leave to the bees this matter of producing a fitting mother to carry on.

There are far too many queens reared and sold in this country which cannot fill the ordinary 10-frame brood box. These queens are the outcome of unwise interference and faulty methods of queen rearing. As a general rule— not absolute, of course—the bees will make fewer mistakes in ordering these various delicate matters than the wisest apiarist is likely to make. I have had queens that for four years did splendid duty when the bees, that autumn, would quietly supersede her; just as they often do with queens in their second and third years; this generally happening in the autumn. After experimenting for years in this matter of superseding I now prefer to leave it to the bees to decide when a queen is worn out, unless, of course, I find on observation they are holding on to some young unprolific queen.

BEE DISEASES LEGISLATION.

I have read with much interest Mr. Barratt's article on "Bee Diseases Legislation," and also our Editor's remarks and criticism of same. Personally I do not agree with either. However, since this article of Mr Barratt has appeared, a forecast of the proposed Bill has been talked about, so that the matter will shortly be one of considering a concrete proposal. I can well understand your position, Mr. Editor, emphasised in your notes to Mr. Barratt's article, as to the hopelessness of any legislation which is not **fundamentally educational** in its scope doing far more harm than good. Certainly, the Draft Bill rumoured, does not conform in any degree to my concept of what is educational. It is, so far as I can see, constructed on the lines of the more drastic U.S.A. State Bills, which are being condemned by the Editors of the leading Bee Journals in America as well as by prominent American Beekeepers who formerly were loud in their demand for these Bills. Years ago I pointed out the futility of this class of legislation—that is what has been termed the policy of the "Big Stick." It has taken our friends across the water a generation to find out the worse than uselessness of this kind of law. Are we to commence the same weary round?

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Apis and Flora.

A Bee Farm.

By A. F. HARWOOD.

So long as it is borne in mind that the essential point in my scheme is that all other considerations must be subordinated to the provision of nectar, the methods employed to achieve this object may be left to the choice of each individual.

It will suffice, I think, to indicate the chief sources from which this may be obtained, leaving the selection from these to be determined by the character of soils and any other considerations that may have weight in particular cases.

There are certain crops, already well-known and largely grown, such as clovers, lucerne, trifolium incarnatum, sainfoin and beans to which may be added buckwheat and flax, mustard and rape.

The cultivation of the first group is familiar to all practical farmers, as is also that of the last-mentioned subjects, but flax and buckwheat are, for various reasons, largely neglected in this Country. Many farmers indeed, have not only never grown either but are ignorant of the very appearance of a field in bloom.

A more charming sight than a broad stretch of **linum usitatissimum** in full florescence would be difficult to conceive. The wide expanse of uniform soft blue of exquisite, restful purity seems as though a patch of cobalt sky had fallen upon the land and lay billowing there, striving to rise again, but held down by the heavy summer haze.

To grow flax for its fibre is a very different proposition from growing it for seed. The former involves the presence of a loamy soil, neither sandy nor too heavy, rich cultivation the previous year, the addition of potassic manures only either Kainit, Sulphate of Potash or Muriate, the last for preference. Much hand weeding is needed as the seed is broadcasted, not drilled, and in the harvesting, the plants have to be hand pulled. Moreover, the subsequent preparation by retting entails the existence of evil-smelling pools to which local disciples of Isaac Walton strongly object, since the discharge of their contents into fishing waters has a poisonous effect on the fish, even the coarsest.

On many grounds, therefore, I am not advocating this form of cultivation; it is neither aesthetically desirable nor economically advantageous, but the growing of flax for seed is quite another story. True, the soil and cultural requirements are, roughly, the same, save that heavier land may be used and farmyard manure more liberally employed.

The harvesting for seed, naturally later, can be done by ordinary reaping machines, the straw being used for paper making, for which purpose it is in considerable demand.

Flowering June and July, the seed ripens by September. The quantity of seed required varies from 6 peck per acre when seed is the object, to 12 pecks when fibre is the desideratum. Dutch seed one year from Riga is considered the best, being the cleanest and most vigorous. Sowing is done broadcast in April and clover may be sown with it to follow. The two seeds should be sown separately, the flax first. A seven-year rotation is necessary, and some growers claim that nine years' interval from crop to crop gives a healthier and finer result.

As to the quality of the honey obtained, beekeepers who have got their bulk from this source told me that admixture of bramble was the reverse of an improvement.

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The Press Mirror.

The Domestic Beekeeper.

DISEASE.

By H. W. Sanders.

Disease is largely a matter of locality. The two brood diseases are highly infectious and many localities are full of foulbrood In others it has been stamped out or never has appeared, but always there is danger of infection. Honey may be imported from a foulbrood district and the cans thrown on the garbage heap without washing Bees are quick to find such, and an outbreak is the result. Wherever there is any danger of foulbrood, the hives should receive plenty of attention and the outbreak stamped out at all costs. The State Inspector should always be called into consultation and his advice followed.

In districts where there are considerable orchards, a sharp lookout should be kept for ignorant orchardists spraying their fruit while in bloom, for this will kill their best friends, the honey bees. Usually a visit and a demonstration will induce them to refrain till the fruit has set.

Do not locate bees within five miles of a smelter, as the fumes will likely kill them.

The Western Honey Bee.

PHACELIA TENACETIFOLIA.

Mr. Payne, the well-known seedsman, of Los Angeles, informs **The Western Honey Bee** that beekeepers are buying the seed of phacelia tenacetifolia to sow, in order to test its virtues as a nectar producing plant. Apropos of this, a letter has been received by the editor from Mr. H. A. Cullen, Field Agent in Bee Culture, Pullman, Wash., in which he says: "Phacelia tenacetifolia has been planted in a small way by Dr. C. E. Sheldon, of Coeur D'Alene, Idaho, in his garden. The bees take to it strong, and it remains in bloom for several weeks."

The American Bee Journal.

OVERWORKING THE QUEENS.

As we see it the queen lays more or less according to her capacity to develop the eggs in her ovaries as fast as the food supplied to her by the bees will allow. When her ovaries are empty, she is done. Similarly when the male sperm is exhausted in her spermatheca, she lays only drone eggs But we fail to see in what way the speed of her laying would affect her progeny. Are the chicks hatching from a prolific hen, properly fed, any weaker than those from an inactive hen, slightly fed?

All beekeepers who have watched a prolific queen at the time of her greatest egg-laying, know that if she is interrupted in her work, her eggs will drop "like ripe fruit." The question for us to settle is whether we should encourage this prolificness by giving her ample room easy to reach, or reduce her laying to the capacity of a small brood chamber.

Gleanings in Bee Culture.

"ARTIFICIAL HONEY."

By A. I. Root.

Years ago, beekeepers were accused of feeding their bees with sugar in order to enable them to "make honey" to be sold at many times the value of the sugar syrup. I protested; and finally, to convince the public, I fed a whole barrel of sugar in a few weeks to a single colony of bees. I induced them to store it in nice new combs and cap it over nicely. The result was not exactly sugar syrup, and it might have passed for very good honey. But my experiemnt with the barrel of sugar demonstrated that it could not be done profitably, and would not be done, no matter how great the difference between sugar and honey. The great trouble was, the bees had to be fed quite a lot before they would secrete wax; and in converting the sugar into wax, a great part of the sugar went somewhere. Others verified my experiment, and whoever undertook it dropped it because it did not pay, and the great wide world stopped accusing us of feeding with sugar, or, worse yet, glucose, in order to get the bees to "make honey."

The California Honey Bowl.

SUGAR SYRUP v. HONEY FEEDING.

I have just about come to the conclusion that sugar syrup is far superior to honey for all feeding in Southern California. If it was not so much work, I would extract every cell of honey in my combs in the fall, wash and dry them, boil the honey and mix it with sugar syrup...... and I firmly believe this course would eliminate brood diseases, lock, stock and barrel. This is why I think sugar syrup a better food for winter than honey in this locality. All honey may not cause disease, but as we cannot tell which is wholesome and which is not, to be sure we get the unwholesome. Boiling treats the whole of it. I feel that if every colony of bees in California were so treated, there would not be a diseased colony of bees in this State next spring.

The Beekeepers' Item.

HOW I RENDER BEESWAX.

By Ben Elly.

As an easy method for rendering beeswax I have tried the following way and find it better and quicker than the old process: First, take about 10 or 12 pounds of the old combs or cappings, mix with water and let soak. Then melt on a stove and have extra can in which to mould the wax. Fasten a piece of cheese cloth over this and then dip out the melted wax and strain through this. After working it through pretty well, pour hot water through the slum-gum on the cheese cloth, and keep working it until all the wax is worked out, pouring hot water through several times. Then set away to cool and form into a cake, covering with an old sack.

The Canadian Horticulturist and Beekeeper.

HINTS FOR BEGINNERS.

Go slow. Don't be in too big a hurry to make your fortune in beekeeping. It is much easier to lose a fortune in bees than to make one. Before starting for yourself, get a thorough knowledge of the business by taking a season or two with a good practical beekeeper. Don't say you are indifferent to Foul Brood in your apiary. It requires more drastic treatment than indifference. If you get it, don't despair. Other beekeepers have had it, gotten rid of it, and come out on top.

The New Zealand Fruit Grower.

FRUIT BY THE HIGHWAYS.

In an English paper a writer alludes to the custom in some Continental Countries of planting fruit trees by the highways, instead of timber as with us. Travellers often comment on the beauty of the trees in bloom and fruit, and wonder why we do not adopt the system. The obvious answer is that our young hooligans would clear all fruit before it was ripe, and probably spoil the trees as well, so that the planting would be a waste of time and money.

How is it then that in Switzerland one sees cherry trees hanging over the roads, laden with delicious fruit, so tempting on a hot day as to strain the morality of even those who pride themselves on their honesty? The Swiss have solved the problem of teaching honesty in this matter. The fruit trees are the property of the village commune, and every year before the fruit ripens it is sold by auction to the highest bidder. The money made goes to relieve the village taxes. Here comes the pull; if any fruit is stolen, the buyer may deduct its value from his payment, so that every householder in the village suffers.

The moral is plain. Fruit stealing is a very risky and unprofitable business in a place where every member of the community, high and low, is a sort of special constable on guard over the crop. The lesson is learnt early, and the result is that fruit hanging over a well-used road is as safe as if it were in a walled garden, and the proprietor keeping the door with a gun.

The New Zealand Beekeepers' Journal.

SWARM CONTROL.

By C. A. Oldman, Waiau.

Swarm control in this district is rather a problem for this reason: During willow bloom, if suitable weather, there is a heavy flow, colonies build up rapidly, and then, just as everything is O.K., the flow ceases, and for six weeks there is nothing doing in the nectar line. But then is the time to test the swarm-control plans. I really believe my best plan would be to dequeen every colony and let them requeen from picked cells. This would hold them back, and at the same time ensure a young queen for each colony, and everything in full swing again in time for the clover flow. It would also save a considerable qnantity of honey, as I have to feed lavishly during this off season. I am continually planning to carry out this programme NEXT season, but when the time comes, I generally have some other plan to try out. I like experimenting, and even if I do sacrifice some honey through it, I still prefer to dabble in experiments. Honey (money) is not everything a beekeeper should aim for; it is the splendid opportunities for experimenting and studying that attracts the genuine beekeeper. We realise that we are working with the most wonderful and intelligent insect on this earth.

The Australasian Beekeeper.

DRIED MILK AS ARTIFICIAL POLLEN.

By Tarlton Rayment.

The manager of a Co-operative Butter Factory invited us to inspect his newly-installed "powdered milk" machinery. It was very interesting. Steam heated rollers of immense size received a stream of milk from a hopper-like arrangement overhead. The water was thus evaporated, and a thin skin of dry powdery substance peeled off to be transferred to a grading machine, which removed any burnt particles and sieved the product to a fine powder. The point is that bees will carry the material in a way that may prove of some benefit to them.

The British Bee Journal.

THE FORWARD MOVEMENT IN BEEKEEPING.

By F. W. L. Sladen,

Apiarist, Dominion Department of Agriculture, Ottawa, Canada.

Have any of your travelling experts tested the New World conclusions on brood disease under British conditions and reported results? The results should be interesting, because we know that the laboratory men on the opposite sides of the ocean have not reached the same conclusions, and that climate and race favour certain diseases and alter their symptoms. Especially is this true in an unstable disease like European foul brood, and in the adult diseases. As a bee breeder tied closely to my work, I had little opportunity to study disease in England, but I recognised European foul brood in my apiary, and found that Italians resisted it.

The names "European foul brood" and "American foul brood" are not very appropriate. Better names would be "melting foul brood" and "ropy foul brood," because they are to some extent descriptive. It would be better still, as suggested to me by Mr. Turnbull, at a recent meeting of foul brood inspectors at Vancouver, to eliminate that unpleasant and really unnecessary word "foul" in connection with a product we eat.

"Melting brood," "ropy brood," and "sac brood" make short, clear, descriptive names for the three brood diseases we know and treat respectively by Italianising, "shaking," and leaving alone. Drugs are not used here to treat bee diseases.

The Beekeepers' Gazette.

TIMBER FOR HIVE MAKING.

By T. Maguire.

Hives are now so expensive to buy, any sensible beekeeper who has a turn for carpentery will make arrangements for the making of his own; or if he is not handy with tools, he will get some local carpenter, or handy man to make them for him. But foreign timber is so expensive, it is almost ruled out.

Some people have an idea that native timber is no good for the purpose. This is a great mistake. I have made hives out of home-grown larch and Scotch fir which are equal to any to be got. If the tree is old enough, and the timber is seasoned, larch will finish as well as the best pitch pine, and old Scotch fir, under the same conditions, will come out as well as the best white deal. Spruce also will give excellent results.

Bee Craft.

LEGISLATION.

In the United States it is being realised that educational methods are better than the "big stick." There is no need to fear the introduction of "big stick" methods here, and our County Associations are already doing good educational work, which let us hope the new Bill will further encourage. Legislation without facilities for educational propaganda will be futile.

The Beekeepers' Record.

LABELLING HONEY.

There are several methods by which honey production may be encouraged. Not only should diseases be dealt with, but our home product should be protected from unfair competition. All honey, whether produced at home or abroad, should be labelled with the Country of origin. English honey producers do not object to foreign honey being imported. In fact we do not produce enough to do without it, but they do object most strongly to it being palmed off on the public under the term of **British** honey. Some of it is very good in every way, and a lot of it is fit for nothing but cattle medicine, though it is still sold as table honey.

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Proceedings of Associations and Clubs.

THE DEVELOPMENT OF THE APIS CLUB.

It is natural for every scheme to pass through a stage of organisation. This may be short or long according to its scope, the time of its inauguration, and the soil for its reception.

"**The Apis Club Movement**" was inaugurated in the very heart of conservatism and in spite of its opposition. It depended partly on liberal support which was promised and forgotton. It courageously struggled, nevertheless. Although stoned from many directions and hampered by many obstacles, it is stronger than ever, and is symbolic of the fact that bee culture as a science and a craft is far above personalities, and is higher than the chauvanistic call of party, district or country.

True, the movement has much suffered by a powerful campaign of misrepresentation from those who should find in it the best means of serving their interests, if they will only display a worthy spirit of co-operation. The rate of its progress has been slow but sure. Friendly critics diagnose it as a fast rate of development, taking into consideration all the circumstances of the case, but we are still very far from having a membership of 10,000, which we calculated † long ago as an urgent necessity before the realisation of the aims of **The Apis Club** can be even modestly achieved.

We have not hidden our difficulties. We have fully exposed them, at least so far as the rules of decency in publicity permit; and have further preferred to do to ourselves the injustice of avoiding, as a rule, publishing messages of appreciation from people of the highest standing in the Bee World, of whose messages any worker would be highly proud, so as to avoid creating any psychological influence in securing co-operation. The work has to live or die according to its merits or demerits.

If, after a severe ordeal of trial (which has meant a considerable personal sacrifice on our part and the culmination of a crisis, in the face of which many of our big small men, whose greatness chiefly rests on their masterful creation and maintenance of party strife and personal cliques, have been frightened and run away like rabbits) and if, in spite of all these difficulties, we have to witness a most steady growth in the membership of **The Apis Club**, we are at least thankful to feel that our membership is growing through a maturing spirit of comradeship and of genial sportsmanship on the part of decent men and women who, in the face of difficulties, prefer to help and construct instead of standing aloof and grumbling. Here lies the tie of practical sympathy and unity of purpose.

Such circumstances have provided us with the best light for picking out the sincere from the opportunist and selfish, the sensible from the foolish, and the broad-minded from the partisan.

There is nothing exceptional in receiving a show of help when one can afford to do without it. It is generally the average human nature to be more inclined to take advantage of a good thing when established, but to avoid taking part in its creation and to hate the sight of it when in difficulties. The magnificent response, the praiseworthy consideration, and the noble encouragement of genuine sympathisers from different sections of the British Bee Community is admirable in quality, though comparatively small in magnitude. They might have felt apathetic at the beginning, but they found no pride in maintaining such an attitude when our difficultues were brought to their notice. They found their very interests in the immediate giving of their whole-hearted support.

To the Britisher, the support of such a public work is, broadly speaking, a matter of self interest, since one of its foremost objects is the popularisation and advancement of Bee Culture in the United Kingdom by progressive educational propaganda, by research work, by material assistance, and by reclaiming the independence of the Craft from the influence of personal cliques. To the international apiarist abroad, whether he be in Central Europe, South Africa, America, or New Zealand or in any other part of the World, it is perhaps more in the nature of serving an educational aim, including the ideal of international solidarity amongst beekeepers of different Countries.

Such labour of love and unselfishness is surely meritorious of full appreciation and respect on the part of British beekeepers. To resent and decline such association would be sheer ingratitude. We must be forgiven for this frankness. It is generally the sincere friend who is unkind in his advice.

During the transient period of organisation the centre of gravity naturally rests on the founder of the work, the success of which would mean everything to him, as it is beginning to mean much to many others. If any leader in the Craft is willing to share in any form in the burden of the organisation (even at this late hour) until the general meeting of members is held, he is more than welcome to do so. If not, his criticism on this point would only be an idle and a bitter joke.

In our next issue we hope to publish the provisional draft of the Constitution of the **Club** as prepared by its organising Secretary, after its criticism by the Associate Secretaries and by the Editors of the Bee Press in this country. This provides one of the most important items on the Agenda for the general meeting of members in the United Kingdom, to be held in London on Saturday, May 29th, 1920, and regarding which announcements will appear in due course in THE BEE WORLD and in the rest of the Home Bee Press.

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† THE BEE WORLD, July 1919, p. 25.

ACTIVITIES OF ASSOCIATIONS.

Beekeeping Associations in the United Kingdom are much concerned with the vital question of Bee Diseases Legislation, and practically all of them have been passing resolutions in favour of the introduction of legislation as a means of combating bee diseases. This is a recognition of a principle; but as to form nothing so far has been put forward.

In France, the re-stocking work is occupying much attention in view of the serious loss during the war of no less than 200,000 hives, including skeps.

In Egypt, there is a movement afoot for the establishment of a Beekeeping Association. We started several months ago a series of contributions on bee culture and bearing on organised beekeeping to **Al-Muktataf,** the leading scientific Arabic magazine, but in view of the present concentration of all classes of the public there on political questions, we recognised the uselessness of the continuation at present of such efforts.

In New Zealand, the question of an anti-dumping measure and the way of its application is the foremost topical question.

In the U.S.A., where the manufacture of appliances practically leaves nothing to be desired and where honey production, despite early pessimistic reports, has proved to be greater than ever during the last season, interest is concentrated on the sugar shortage, on greater co-ordination between beekeeping societies and the revision of the constitution of the N.B.K.A., and on further educating the public by lectures and demonstrations, in addition to the short courses of instruction inaugurated by the Government and the Colleges.

Our Book Shelf.

Books still accomplish miracles; they persuade men.—CARLYLE.

HOW TO MANAGE BEES IN SPRING. †

This is a member of a series of educational leaflets intended for beginners but which may also be profitably read by others. The publishers do not claim originality for the plans suggested and credit is given where the originator is known. In simple and effective teaching its directness is admirable. Here is an extract: "**Early Examination Necessary.**—Spring management is one of the greatest problems in beekeeping. The task is to so manage the colonies that the largest possible force of worker bees is available at the beginning of the period when, in your locality, the most important honey plants begin to yield nectar. Efficient spring management remedies any mistakes made since the previous honey flow, and prepares to get each colony of bees to maximum strength for the yield of nectar. There are really only two seasons for the beekeeper. One is during the preparation for the honey flow—from the end of honey production one year to the beginning of the honey flow the next year—and second, during the period of the honey flow itself.

After bees are set out of the cellar, or when wintered out doors, each hive should be examined at the earliest time the weather permits. Colonies should be examined at once for three necessities: 1.—Adequate stores, 2.—A laying queen, 3.—Sufficient room for the queen to lay eggs."

On the subject of **Spring feeding** the reader is told: "Where the bees are short of stores in spring, feeding may be resorted to. If you have clean combs containing good honey, replace empty ones in the hive with combs containing honey. Beekeepers must always remember that American foul brood, a bee disease, is transmitted through honey. Do not buy hives, honey for feed or any other than new bee supplies from anyone unless the seller can show a state apiary inspector's certificate of 'no disease.'......

Sugar syrup may be given in a feeder placed as near the cluster of bees as possible. For this a France feeder is ideal when placed inside an empty super above the bees. If the weather is cold, lay several thicknesses of newspaper between the empty super and the brood chamber. Tear a small round hole in the newspaper over which to set the feeder. This keeps the heat below. Sugar syrup is made of one part clean water and two parts pure, granulated cane sugar. Impure feed causes dysentery among bees. Do not feed heated syrup. The amount of feed needed to rear a frame of brood is unknown. Bees may have to be fed frequently in spring if short of stores, until nectar is available from natural sources."

In view of the appreciable influence of locality in the general management of bees for honey production, it certainly merits the attention of beekeeping societies to publish such leaflets, with specific emphasis on local conditions for the benefit of the majority of their members. The **Kent B.K.A.** have set an excellent example in this way by publishing a very useful pocket diary which contains many practical hints.

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† G. B. Lewis Company, Watertown, Wisconsin, U.S.A. 1919. 5 cents.

THE USE OF THE TRUCK. Writing to the **Am. B.J.** on the use of the truck to the commercial beekeeper, Mr. E. F. Atwater observes: "In these days of rapid transportation, the beekeeper who can reach his yards with a car or truck, and does not do so, is becoming rare, and probably is not conducting his business in the most economical and efficient manner. Among the favourite means of transportation, the Ford stands first because of low cost and economical upkeep."

KEEP MORE BEES. "That should be the aim of every beekeeper, for only by extensive beekeeping is any real money made out of honey. Where disease is present it is possible to go too far and get more than one can handle, but where there is a clean bill of health, it is safe to say that most beekeepers err on the side of restricting their business too far. If they would only take their money out of the bank and capitalise their own knowledge by keeping more bees and concentrating on time-saving methods, they would make more money. The loss of an occasional swarm is far less than the loss of a ton of honey, yet many a ton of honey goes to waste for want of bees to gather it, while there is likely a beekeeper near who has the money and the experience, but is too busy watching for that swarm."—W. H. Sanders, in **The Canadian H. and B.K.**

FINE JANUARY IN PORTUGAL. Mrs. G. B. Mitchell, of Cerrado Da Eira, S. Pedro, Cintra, Portugal, informs us: January is proving here to be an exceptionally fine and warm month. It is to be regretted, however, that sugar is impossible to get, so one cannot feed, and though I left the hives well stored in the autumn, the bees have almost consumed it all. Bee feeding under such conditions is a most serious problem in unfavourable parts of Portugal.

CAMBRIDGESHIRE BEEKEEPERS AND LEGISLATION. The only part in England where the County Association appears to have any real consideration for the views of its members in regard to the thorny subject of bee diseases legislation, seems so far to be Cambridgeshire, where a general meeting of members is proposed for discussing the question. We trust the Committees of other Associations will follow a better course than considering their members a negligible quantity, from whom no mandate is necessary if they have to represent them at the supposed coming Conference of representative beekeepers to be inaugurated by the Ministry of Agriculture.

THE METAL COMB. "What about the extreme variations in temperature that are met with in some countries?" asks more than one critic of the Metal Comb. The answer is simple and is supplementary to what we have said before. Suppose a popular hive is found unsuitable in a certain district, would you condemn the bees, the combs, or the hive? Obviously the latter. One has always to weigh advantages and disadvantages in order to arrive at an unbiassed verdict, and there is no wisdom in discarding what is more valuable of two articles for the sake of preserving the less valuable. The Metal Comb has tremendous advantages. Before these have to be thrown aside, one should think of adopting better insulating hives and of revising his method of management.

YELLOW JACKETS IN A BEEHIVE. Mr. Frank C. Pellett, Associate Editor, The **Am. B.J.** reports a case of a hive which he found occupied by wasps. They were easily subdued by a smoker (a fact which he points out justifies a different explanation from that usually given in regard to the bees). Part of the wax comb built by the bees had been removed by the wasps and horizontal combs made of paper built instead.

IRISH BEEKEEPING. When we are drawing so much attention to beekeeping conditions in other countries and are emphasising the fact that no great advancement in beekeeping can take place in any land if a policy of seclusion has to be championed, we naturally think, in the first place, of Irish beekeepers, and of the valuable service rendered in the Sister Country by **The Irish Beekeepers' Association** during its 39 years of existence, not least in significance amongst which is its instrumentality in the introduction of the Bee Pest Prevention Act in Ireland. Commencing this number, a series of interesting historical articles from the pen of Mr. M. H. Read, M.A., Hon. Secretary the Association, appear in THE BEE WORLD. They merit the careful study of our readers. It is certainly high time that a thorough exchange of knowledge and a closer bond of friendship should be established between English and Irish beekeepers. We cannot do better than recommend to our readers the regular perusal of **The Irish Bee Journal,** the official organ of the I.B.K., the subscription to which is only 2s. 6d. per annum. Broad-minded friends of Irish beekeeping would help a worthy cause by contributing to the funds of the Association. Donations should be sent to the Hon. Secretary, at Clonoughlis, Straffan Station, Ireland.

THE IRON HAND IN "THE STATES." Florida has recently made very stringent rules in regard to disease. No hives or fixtures are to be moved into the State without a certificate stating them to be free of disease. All apiaries in which disease has appeared are to be strictly quarantined and no equipment moved from them unless properly disinfected as prescribed and approved by the plant commission. No queen bees and the attendants are to be shipped within the State, unless accompanied by a certificate of the current year from an authorised inspector to the effect that the queens are free from disease, or a sworn statement by the queen-breeder that the honey used in the candy was diluted and boiled in a closed vessel.—**Gleanings.**

DISTRIBUTING ITALIAN QUEENS IN GREAT BRITAIN. The Ministry of Agriculture and Fisheries, we understand, have made arrangements for the importation and distribution of pure fertile Italian Queen Bees for the 1920 season, so that the Italian hybrid strains of bees already introduced may be maintained. The Ministry are anxious that as many queens as possible should be distributed. The price is 8s. 6d. per queen, post free. Beekeepers wishing to avail themselves of this help should at once communicate with their County Bee Committee

A TREATISE ON THE DUTCH BEE. This is the right title for a most creditable and charming illustrated brochure which has just been issued from the "Orme Lodge" Apiary, of Cumbernauld, Dumbartonshire, and is distributed free on application to interested beekeepers.

"MALIGNANT DISEASE." Dr. Goodrich, of the University of Oxford, is provisionally classifying separately cases of malignant dysentery, which do not show any signs of Nosema Infection, under the heading of "Malignant Disease." She is conducting valuable research on diseases of adult bees in which she will be assisted by receiving **live** samples of bees suspected of the so-called "Isle of Wight" Disease.

The Arena: Letters to The Editor.

Criticism is a disinterested endeavour to learn and propagate the best that is known and thought in the world.—MATTHEW ARNOLD.

BEE DISEASES LEGISLATION.

To the Editor of The Bee World.

DEAR SIR,—As you are inaugurating a discussion on bee diseases legislation by means of a competition, might I ask the hospitality of your columns for a few observations on the proposed Bill of 1912? I do not wish to compete for the prize; but, as I think free discussion may result in the formulation of a Bill that would meet with the approval of all classes of beekeepers, I hope your readers will criticise my remarks freely.

It has always seemed to me that legislative proposals have hitherto started off with a fundamental mistake. One has only to glance at the 1912 Bill to perceive that it is based on Acts of Parliament that have been passed for the prevention of diseases in other domestic animals. It does not appear to have occurred to anyone that, as the conditions under which bees are kept in domestication differ essentially from those under which the shepherd and pig-keeper work, the whole framework of a Bill relating to bees must be different. To begin with, the bee can hardly be regarded as domesticated. We can afford it certain advantages to enable it to compete on favourable terms in the general struggle for existence, and we can quell any attempt on its part to revolt against our interference. To some extent, also we can control its breeding. But beyond that, we have no more to do with its existence than we have with that of the sparrow or the rat.

When a man keeps pigs, he is obliged to feed them, clean out their styes and so forth, and thus he cannot fail to learn something of their needs. But he can keep bees by supplying them with an old packing case and a couple of square feet of his garden and taking no further interest in them until he uses the sulphur pit. Were a man to keep pigs under such conditions, turning them loose about the roadsides, the law would certainly step in—that is, if he were lucky enough not to have them all stolen within the first day or two; and if swine fever were prevalent in the district, he would be heavily punished.

Now, Bee Diseases are always either present or imminent in a district. Therefore no legislation can be effective that does not make it penal to keep bees in a go-as-you-please manner. Why should the careless pigkeeper be punished and the careless beekeeper go scot-free—and even be compensated for loss? The careful beekeeper never was a danger to the public. If foul-brood attacks his stocks and it is judged to be in the public interest to destroy them, by all means let **him** be compensated. But I notice that the 1912 Bill makes no provision for refunding any expense he has been put to in trying to **save** a stock. Obviously such an attempt, in the early stages of an attack, is to the benefit of the public. If he succeeds (as he frequently does), the Country is the richer by one stock; but to succeed, he must make considerable sacrifices, not only in honey prospects, but also in combs, &c. Yet, according to the Bill, he is to get nothing; whereas his neighbour, whose carelessness has caused him this trouble and expense, is to be rewarded —apparently with the sole object of enabling him to recommence his nefarious game. I understand that the Government declines to proceed with bee legislation, on the ground that there is too much general opposition. I confess, I am delighted to find we possess such a sensible Government! I am myself one of the opponents of legislation, so long as we try to rush through such illogical rubbish as was proposed in 1912.

No doubt the careless beekeeper was also an opponent. I use the past tense, because I believe very few of his sort have any bees at the present moment. They have been " wiped out " by I.W.D., and prices are still too high to encourage them to re-start. We can therefore count them out—and more especially so, if the law is to refuse to recognize their right to keep bees at all. If, therefore, we can arrive at a scheme that will satisfy all true beekeepers, we shall be in a position to point out to the Government that opposition no longer exists.

Now, in order to arrive at such a scheme, we have got to recognize another fundamental point, and that is that the bulk of the population of these Islands is grossly ignorant of everything connected with bees. There are probably at least five million persons in England alone that could handle pigs, cattle or sheep with some degree of success and therefore have a right to an opinion on their management; but I question if there are two thousand whose opinion on anything relating to bees is other than childish. From this it follows that bee laws must be wholly administered by this small minority. If a careless beekeeper has to be summoned before a court of law, it must not be in the power of the judge or magistrate to decide any more than his guilt or innocence. To lay down a maximum penalty, as is done in the 1912 Bill (section 3), is worse than useless—an ignorant magistrate would impose a fine of 2/6 in nine cases out of ten, having no means of understanding the gravity of the offence. A minimum fine **must** be laid down; and it must be a heavy one.

Then again, of what use are the Board's Inspectors? By section 5 (1) it is clearly contemplated that they will have no knowledge of bees. Just imagine a retired shopkeeper from the middle of London solemnly examining a comb to decide whether it is affected by foul brood! As likely as not, he will condemn stocks at random, in order to impress the world with his energy and the consequent necessity of retaining his services at a comfortable salary. If he is tender-hearted, he will pronounce the diseased stocks of a careless cottager free of disease. The well-to-do country gentleman will ask him to lunch and give him a glass of port; and he cannot repay such hospitality by condemning his stocks. And if he happens to have a touch of liver, he will order the immediate destruction of a stock in the pink of condition.

From this it would appear that inspections must be carried out by recognized bee experts. But, with all deference to their willingness and general good work, it is notorious that these visiting experts from County Associations have not proved an unqualified success in the past. To speak honestly, I fear many of them suffer from " swelled head." They seem to think that, because they have passed the examination for a first-class certificate, they know all there is to know about bees, forgetting that no man knows the hundredth part thereof; and, what is worse, they seem to think that anyone that has not passed the examination must necessarily know less than themselves. Let it not be thought that I am writing bitterly out of personal experience. I have only once been visited officially by an expert, and he was both courteous and helpful; but I have gathered from conversations with cottage beekeepers that they have not always had the same experience as myself in this matter. What the expert too often overlooks is that a cottager, with twenty years' experience of proper beekeeping, is an authority on what is, after all, a little-understood craft, his failure to take a certificate being due either to lack of the necessary leisure or to sheer nervousness at the idea of facing the unknown in the shape of the examiner.

And, for another reason, I am opposed to the system of visiting experts. How can a beekeeper, whose heart is in his hobby, find time to travel much in summer? Obviously, he must neglect his bees to some extent and is thus at once out of complete sympathy with the beekeeper he visits. He becomes at once an official: visiting, and not beekeeping, is his profession. He may be perfectly honest; but it is notorious that professionalism of this sort opens the door wide to all manner of dishonesty. Ask any New Zealand farmer his opinion of the Government rabbit inspectors. I happen to have visited that Colony and can only say that, whenever the subject was mentioned, it elicited a storm of indignation from farmers great and small. After nearly ruining the country, the Inspectors had their powers considerably curtailed, and the rabbit pest was at once got under control.

For the administration of a bee law, inspectors should be local beekeepers; and when I say " local," I mean that each parish should find its own. As a matter of fact, this system has been in actual vogue throughout the country for years past. It is a matter of ordinary neighbourly feeling for fellow-parishioners to drop in on one another for a friendly chat over their hobby and to ask and give advice. Naturally I would allow out-of-pocket expenses to such (recognized) parish inspectors; but, seeing that, under the system I advocate, it would be to the clear personal advantage of an inspector to carry out his duties, I apprehend that there would be very few claims for expenses.

To sum up: I am of opinion that a law based on the following points should meet with universal approval among true beekeepers:

1 It shall be an offence to keep bees without efficient supervision by the beekeeper or some person in his employ. An offender shall, on conviction, be fined not less than one pound or more than five pounds for the first offence, and not less than five pounds or more than twenty pounds for any subsequent offence.

2. The term " efficient supervision " shall be held to imply the employment of movable-frame hives in such a manner as is laid down in recognized guide books, or else the employment of skeps or boxes under the following conditions:—

(a) Any person keeping bees in skeps, &c., shall notify the Parish Inspector of Bees within 48 hours.
(b) His stocks shall be liable to inspection by the Parish Inspector at any time.
(c) He shall adopt such measures for their welfare as the Parish Inspector shall recommend.
(d) He shall destroy at once (with or without compensation) any stock whose destruction is demanded by any three fellow-parishioners whose bees are kept in movable-frame hives; but if one other such fellow-parishioner shall declare destruction to be unneccessary in his opinion, the Inspector shall refer the matter to the County (or Central) Beekeepers' Association, whose decision shall be final. If there are in a parish less than four parishioners keeping bees in movable-frame hives, either party may obtain an advocate (or advocates) of his view from any neighbouring parish or parishes, provided such parish or parishes be within five miles, measured from church to church by road.

3. No person employing movable-frame hives shall be deemed to have his stocks under efficient supervision, unless he has obtained from the Parish Inspector a certificate to that effect. The issue by the inspector of such a certificate shall be notified by him at once to the County (or Central) Beekeepers' Association. Until such certificate is issued, the beekeeper shall be deemed to be keeping his bees in skeps.

4. No person, other than the Parish Inspector, shall be permitted to examine the stocks of a beekeeper, unless thereto invited by the beekeeper himself or required to do so, as representing the County Association, under section 2 (d) above.

5. A Parish Inspector shall be elected by such other parishioners of the parish as keep their bees in movable-frame hives under efficient supervision; and the fact of his election shall be notified at once to the County Association over the signatures of all such beekeepers. The inspector must himself be a beekeeper, using movable-frame hives under efficient supervision; and immediately on his election, he must obtain a certificate of efficient supervision over the signatures of two of the electors, which certificate must be forwarded at once to the County Association. The following extraordinary measures may be adopted where necessary:—

(a) If only one person in a parish keeps bees in movable-frame hives, he may appoint himself Parish Inspector, obtaining his certificate from any two certificate-holders in parishes within 5 miles or direct from the County Association.

(b) In order to provide competent electors in each parish after the passing of the Act, the County Association shall, if requested thereto by any beekeeper and provided there is no known objection, appoint a temporary inspector (for a term not exceeding four weeks) for the purpose of issuing certificates and thus creating qualified electors.

(c) In a parish having no inspector, any bees kept within 2 miles of the boundary of a neighbouring parish shall be deemed to be under the inspector of that parish.

6. The stocks of any certificate-holder shall be liable to inspection at the request of any two certificate-holders in the parish, or of one, if the parish contains less than three. If his stocks are found to be not then under efficient supervision, his certificate shall be cancelled and he be fined five pounds. Provided always that a certificate-holder is at liberty to resign his certificate not less than one hour before inspection.

7. The stocks of an inspector may be examined by a certificate-holder of the same parish (or by the inspector of a neighbouring parish within five miles) at any time, the same penalties and provision being applied to him as are laid down in section 6. Any certificate-holder may convene a meeting of others of the same parish at any time to decide whether the inspector shall be removed from his office.

8. An inspector shall receive no remuneration, but is entitled to actual out-of-pocket expenses, which shall be paid by the Government on a certificate from the County Association. Provided that such expenses, if they amount to more than £2 in any year in any parish, shall be fully explained by the claimant and shall be subject to the approval (which may be given either before or after their incurrence) of the Ministry of Agriculture.

I fear my letter has proved longer than I had intended; but before closing, I should like to draw attention shortly to a few points of the above proposals.

In section 2 (d) I would suggest destruction **with** compensation for the first occurrence. Destruction would be rare early in the season, as driving could be adopted. Section 3 provides amply for the beginner. As regards sections 6 and 7, as the careful beekeeper will be invested with a certain amount of power, it is only fair that a misdemeanour on his part should be severely punished. I am not sure that the penalty is not too light.

Provision will, of course, have to be made for subordinating Parish Inspectors to the County Associations and for defraying the expenses of the latter in arbitration, &c. I have merely outlined the scheme from a parochial standpoint. As, however, the actual administration of the law will be carried out among neighbours, there should be little friction. After all, no man goes out of his way to make himself a nuisance to his neighbours—he would find it did not pay.

Yours faithfully,

Brewoods Close, Cookham Dean. H. CAMPBELL.

INTERCHANGEABLE HIVE PARTS.

To the Editor of The Bee World.

DEAR SIR,—The last paragraph of Lieut.-Col. O'Brien's letter in the November BEE WORLD should make some of our Bee Appliance manufacturers "furiously think."

A perusal of the average British manufacturer's catalogue reveals such number of sizes and varieties of hives that one is bewildered, added to which, no part of one design will interchange with another, so that if in need of only certain parts, the buyer has to pay a fancy price or buy a new hive.

Compare the average American catalogue. There are only two or three types offered, and in each case all parts can be purchased separately with the certainty that any part will fit any other, a point of the greatest convenience to the apiarist who, say, requires only a few brood boxes and a large number of supers.

Now, why doesn't one of our manufacturers come out with a line of interchangeable hive parts; it is easily managed, and I feel sure would soon command a big market.

The greater number of beekeepers do not want the boxes of gadgets that are offered at the present time, but a plain, straight forward hive that can be purchased for a reasonable price and parts duplicated from stock by return.

A leading manufacturer is advertising for Hive Makers. Why? Cannot hives be built by other than experts in that one line.

I venture to suggest that American hives are not built by "Hive Makers," so called, but worked on plain straightforward factory lines.

Of course I shall be told that I don't know what I am talking about, and don't understand the accuracy required.

Well, I don't! But I am at present producting in wood in large quantities an article, the variation allowed on which is three thousandths of an inch on the parts that matter and with no experienced labour, an accuracy far in excess, I believe, of that required for hive making.

I feel sure that similar methods can be employed with advantage in our hive factories, if manufacturers would only educate their public through the medium of the Bee Press to the advantages accruing from the adoption of standardised equipment. For the love of Mike, let it be soon.

Yours faithfully,

Crayford, Kent. T. I. ROBINSON.

A QUEEN SUNNING HERSELF.

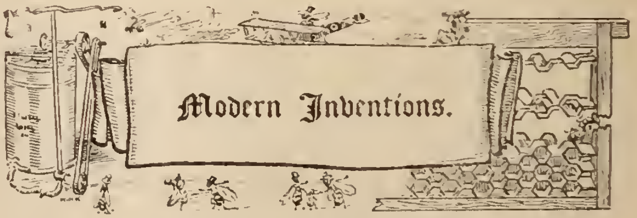
To the Editor of The Bee World.

DEAR SIR,—On watching yesterday about noon one of my hives, regarding which I was rather uneasy, because whilst pollen was being carried in all the others, the occupants of this particular one were practically doing nothing, I suddenly saw the queen arrive from a flight and run into the hive. On speaking of this occurrence to my experienced assistant he informed me that that same morning (December 30th, 1919) about 9 a.m. he also had seen what he at first thought an unusually big worker bee on the flight board of another hive. His curiosity being aroused, he went closer and found that it was the queen sunning herself. He watched her for about two minutes, when several bees came out of the hive, surrounded her, and seemed to drive her inside. In view of the fact that all text books which I have read declare that the queen only leaves the hive on two occasions, viz, for her nuptial flight, or to head a swarm, I think you may find the above mentioned incidents interesting.

On the whole, December has been bright and warm here. The temperature on sunny days has generally been between 57° and 60° F. We have had some rain and heavy night dews, and the bees have been busy the whole month carrying in some honey and plenty of pollen from the flowers available, principally Eucalyptus globulus, and Charlock.

Yours faithfully,

Cerrado da Eira,
S. Pedro, Cintra, Portugal. G. B. MITCHELL.


Modern Inventions.

THE A Z.A. QUEEN CELL INCUBATOR.

Successful incubation of queen cells depends as much on humidity as on temperature and gentle manipulation. For these reasons a water bath is much superior to an ordinary biological incubator.

The purpose of this appliance, which merely extends a recognised system of incubation from the scientific laboratory to the apiary, is to facilitate to the smallholder (who is otherwise an experienced beekeeper) the task of incubating good queen cells that might otherwise be discarded. It is more economical, easy to manipulate, and surer in results than expensive warm air incubators.

The accompanying illustration, which is self-explanatory, indicates the structure of this metallic water bath. It will be readily seen how easy it is to make repeated observations at any time without jeopardising the regularity of temperature, the case being different with a warm air incubator. Further, there is no inconvenience in a large apiary in moving about one or more incubators of this type, already charged with warm water at blood heat temperature, and transferring on the spot to their test tubes the queen cells that are suitable for incubation. The numbers marking the test tube holes serve for reference, in making records. As an alternative, the test tubes may be numbered with a "glass pencil."

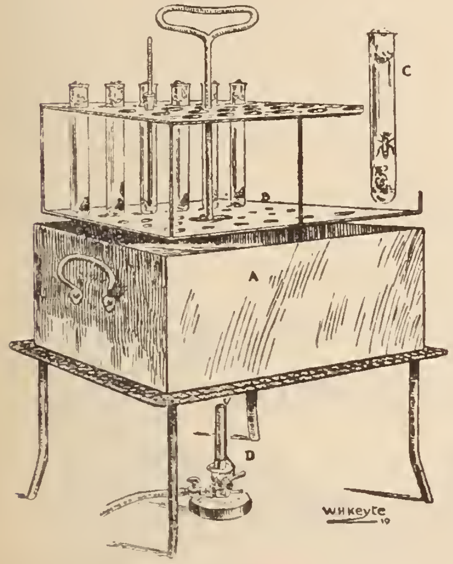


Fig. 50.

A = Water Bath. B = Test tube tray with numbers. C = Test tube illustrating one way of accommodating the queen cell for incubation. D = Bunsen Burner.

To prevent the test tubes (which are of sufficiently wide calibre) from floating, one or two shots are placed at the bottom of each tube. A piece of grease paper rests on this, supporting a little soft candy, then a piece of perforated zinc rests on the top. The queen cell is **gently** introduced bottom downwards or otherwise, and left in a slanting position, the diameter of the test tube being sufficiently wide to take the queen cell comfortably without any difficulty in its introduction, so that when the emerging queen finally liberates herself she will find no difficulty in helping herself to an early feed. Moreover, the apiarist is never discouraged from inspection by partially lifting the test tubes tray, as he can see much at a glance. There is hardly any risk therefore of a gross negligence.

Another way of accommodating the queen cells which may perhaps appeal more to the majority of beekeepers, is by using a wire gauze or perforated zinc lining to the test tubes. This metallic lining should be closed with the same material at the bottom and should rest on the soft candy at the base of the test tube. In its upper part a constricting ring projects internally and serves as a ring cushion, on which the queen cell rests, with the **apex directed downwards.** The queen on emerging will have ample facilities for climbing down and up the tube, and will not be robbed of the chance of sucking her moist food through the perforated metal base of the test tube sheath. The queen cell itself will act in this case as a partial cork preventing the escape of the occupant, but in any case the test tube should be **lightly** plugged with cotton wool.

Two seasons of trial, the insignificant proportion of failures when care is observed, and the assured scientific and economical features of this method of incubation justify its recommendation.

The appliance is obtainable from Messrs. James Lee and Son, of Uxbridge, Middlesex.

HISTORY OF THE IRISH BEEKEEPERS' ASSOCIATION.—I.

By M. H. READ, M.A.

A few men of vision have met together. They have tasted of the delight, which has since intoxicated many more, of handling bees confidently without fear of stings.

They are men of various occupations—several clergy, an alderman, a seedsman, an art printer and two or three private gentlemen—drawn from Counties Galway, Kilkenny, Waterford, Kildare, Dublin. "Let us form an association," say they, "to bring to every corner of our country the love of this little servant to man, which has hitherto been rewarded with sulphur fumes for excelling all other insects in gathering the richest sweets of earth for our use." The time was April 11th, 1881, the place the R.D.S. Spring Show, Ballsbridge.

Having elected a president, the Marchioness of Waterford, an Hon. Secretary, Mr. Robert Sproule, an Hon. Treasurer, Sir J. W. Mackay, Seedsman, and a Committee of 15 members, and having adopted a constitution of 14 rules, the first business was to resolve that the Irish Beekeepers' Association recognizes only two sizes of frames for use in hives, viz., Abbott's Standard Frame $16\frac{1}{4}'' \times 15\frac{1}{2}''$ and the Woodbury $14'' \times 8\frac{1}{4}''$.

The lead of the British Beekeepers' Association was followed in the next year. The monthly meetings of Committee were held for two years at the office of the Hon. Treasurer and for three years at the office of the Society for Prevention of Cruelty to Animals.

That the founders of I.B.A. exerted themselves to some purpose is evidenced by the first Annual Report; which records a membership of 128, and refers to the formation of two County Associations—Armagh and Tyrone. Cork followed with a County Association in 1882, when the parent Association increased to 177 members.

A Bee Tent costing £16 10s. was one of the first items of expenditure: and in this the Rev. J. M. Aldridge, of Eyrecourt, and Brother Joseph, of the Abbey Loughrea, lectured and manipulated at the first show organised by the Association held in Salthill Gardens, 10th Oct., 1881, and £14 1s. was taken for admission to the show.

The Salthill Show was repeated for a number of years, and the Bee Tent became a feature also of the R.D.S. Spring Show and at many of the provincial Show—Limerick, Kilkenny, Sligo, Cork, Armagh, Londonderry, etc.

This was the period at which Mr. S. J. Baldwin, of Bromley, Kent, was at the height of his fame as a lecturer and manipulator; and his services were engaged for the Bee Tent year after year at Ballsbridge.

Classes for Honey were arranged for the Dairy Show at the joint expense of the Association and the R.D.S. and were well patronised from the first.

The activities of the Association made such heavy demands on the time of the Hon. Secretary that, although a second was appointed, Mr. E. E. Davidson, and an Assistant Secretary, Mr. Armstrong, at £10 salary, Mr. Sproule found it necessary to retire within two years, Mr. Edward D'Olier taking his place. And he was followed by Dr. C. F. Knight, who threw immense energy into the work, lecturing all over the country.

M. H. Read, Esq.

Lord Ardilaun was elected President this year and was re-elected annually till 1915, when death had claimed him. The funds of the Association failed to keep pace with its activities in 1884-5 by some £30, so that at the Annual General Meeting in 1886 a proposal was brought forward to wind up the Association. This was opposed by Mr. Robert Sproule, who pointed out the difficulty of restarting if it were once allowed to lapse. And he was strongly supported by Mr. Walter J. Stanford, who undertook the Hon. Secretaryship. The hat was sent round and more than £15 was collected from the meeting, a policy of retrenchment was adopted, cutting out the expenses of the Spring and Autumn Shows; with the result that all indebtedness was paid off and the year closed with a balance of over £5 in hand.

Henry Chenevix, J.P., presided at this critical meeting; he who afterwards acted as Hon. Secretary for thirteen years with signal success.

In order to compensate members for the loss of the Spring and Autumn Shows, an exhibit of Irish Honey was organized for the British Beekeepers' Show at the Indian and Colonial Exhibition at South Kensington, July 29th to August 5th and Mr. Stanford took charge of the Exhibition. The honey season in Ireland was late in that year, and only four members availed themselves of the facilities offered, sending between them three exhibits of 1 lb. sections and two of 1 lb. bottles, gaining one second prize and two H.Cs. in a class of 42 entries, and one H.C. in a class of 38, so that 80 per cent of the Irish exhibits secured honours. Previous to this year the efforts made by the Association for the disposal of members' honey had proved unsatisfactory. But now arrangements were made with Messrs. Carton Bros., of Halston Street, to sell members' honey on commission. Fourteen members entrusted honey to the extent of 1,228 lbs., which realized £50 9s. 10d., the average price being spoiled by a number of unfinished sections sold at 3d. each.

[We are indebted to the courtesy of the Rev. J. G. Digges, M.A., Chairman, **The Irish Beekeepers' Association,** for his permission to reproduce Mr. Read's photograph, which is additionally of historical interest, since it originally appeared in the first edition of **The Practical Bee Guide** fifteen years ago.—Ed.]

THE "EDWARD" NUCLEUS HIVE.

In view of the present boom of bee culture in almost every County in Great Britain to an extent never witnessed before, those who are engaged in re-stocking work will much appreciate the "Edward's" Nucleus Hive, manufactured by Mr. Edward J. Burtt, of Stroud Road, Gloucester, England, not only for the excellence of its make, but also for the originality of its useful design. Both features are important qualifications to bear in mind when applying the description of enterprise to any manufacturer. Great production, great capital, unhealthy

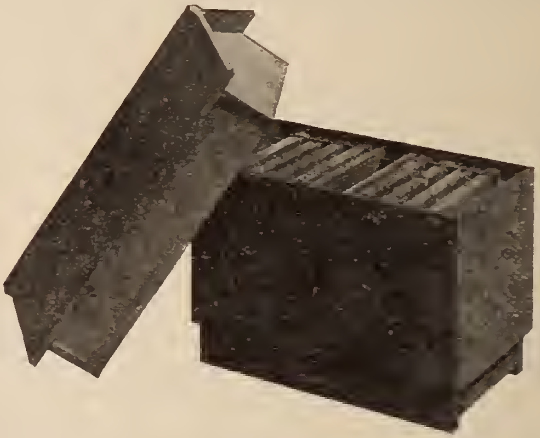


Fig. 51.—The "Edward" Nucleus Hive.

rivalry and competition in cheap articles without regard to the elevation of the beekeeping standard, are not by any means the qualifications of genuine enterprise for the mutual benefit of the public and the Trade alike. Our advertisers as well as non-advertisers should generously accept our impartiality and forced unkindness on these points, unless empty flattery is to remain the order of the day.

Mr. Burtt writes: "This hive is arranged to accommodate two half-frame nuclei, one at either end, the frames hanging across the hive, or one half-frame nucleus up to a nine-frame capacity, whilst when the frames are again joined the Hive provides hanging capacity, lengthwise, for five frames of standard size. Being double-walled, a small colony, provided with sufficient food will winter in this Hive with safety in an ordinary winter. This nucleus Hive is fitted with 8" 'Edward's' divisible frames (which will fit together and make four standard ones), and two small dummies."

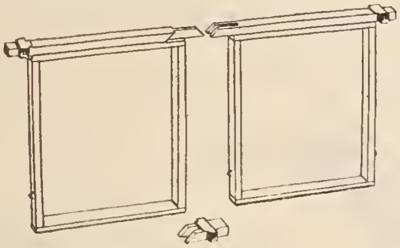
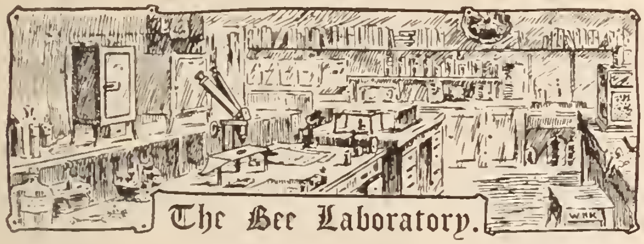


Fig. 52. "Edward's" Divisible Frame.

The Hive is porchless and is provided with two floor board entrances (one at each end) which can be easily closed and opened by sliding metal shutters. In addition it has a most convenient wooden adjuster for the quilt. It is decidedly one of the best queen mating and nucleus hives of its class.


The Bee Laboratory.

NOSEMA IN HUMBLE BEES.

By ANNIE D. BETTS, B.Sc.

Those of my readers who are fortunate enough to possess a good microscope may be glad to know of an apparently unfailing source of **Nosema** spores for purposes of study. In microsporidiosis of the hive bee, spores appear to be comparatively rare, at any rate in the south of England; it is therefore useful to be able to obtain them from another source and so familiarise oneself with the appearance of a heavy spore infection.

Last spring, in the course of another investigation, I found that the Common Carder-Bee (**Bombus agrorum**, Fabr.; the tawny, rather small, humble-bee, common in May in the south of England) was invariably infected with a species of **Nosema**, similar to that described by Dr. Graham-Smith, p. 132 of Report on I.O.W. Disease, 1912. A few specimens of other species of **Bombus** were examined, but none of them proved to be infected. The parasite occurs in large numbers in the Malpighian tubules but does not appear to attack the chyle-stomach, so far as my rather rough observations went. The infected bees were captured while at work, and were to all appearances in the best of health; so that here, at any rate, we have an instance of a heavy infection with **Nosema** unaccompanied by disease, whatever may or may not be possible in the case of the hive bee and **Nosema apis**.

Now it is known that cases are on record where this **Nosema**, or a species closely resembling it, has caused great mortality among humble bees (see the 1912 I.W.D. Report, p. 131-132); it may perhaps be significant that **Bombus agrorum** was not found among the species affected. This raises the interesting question whether **B. agrorum**, which appears to be immune, is the agent whereby the parasite is carried through the winter, and spread during the summer (presumably by infection of flowers) to other species of **Bombus**, which, being non-immune, die of its effects and are consequently of no use to it as winter hosts.

To prepare slides of the spores, separate the abdomen of the bee, and with a pair of forceps pull out the digestive organs. Make a smear on a clean slide or cover glass (the former is more wasteful of stain, but easier to manipulate) with the tangled mass of Malpighian tubules; or they may be placed in a drop of sterile water, and the smear made with this. When dry, fix by passing three times through the flame of a spirit lamp or Bunsen burner; this is important, else the subsequent operations will wash all the spores off the glass.

Since the coat of the spore—the sporocyst—is disinclined to absorb stains, it is necessary to treat it before proceeding further. Fantham and Porter recommend potash or creosote for this purpose (p. 65 of the 1912 Report); but a solution of Jeyes' fluid in water seems to answer well; I have unfortunately no note of the strength, but 5-10% will probably do. This is placed on the smear and allowed to act for an hour; then the slide is well but gently washed, and is ready for staining. The easiest stain to use is Giemsa. The stain can be obtained ready mixed from dealers in microscopical appliances. The stain is diluted (1 drop stain to 10 drops water) and allowed to act on the smear for some hours; a convenient plan is to leave the slip in the stain all night. In the morning it is taken out, washed carefully, and dried in a warm place (but not too near a flame, lest the spores be shrivelled). When quite dry, a drop of Canada balsam is placed on the smear, and a thin cover glass put on. The slide is then complete.

Those interested in trying other staining methods should read Fantham and Porter's papers on **Nosema apis**; for example, that in the 1912 Report above-mentioned (to which the present writer is indebted for the information on staining **Nosema** which suggested the above rough method). I have found Iron-alum Haematoxylin, and Methylene Blue followed by Congo Red,* satisfactory; the latter produces a beautiful slide, as the sporocyst is stained red and the protoplasmic contents are blue, but it fades as time goes on. This is probably due to some cause which it is hoped to eliminate by further experiment.

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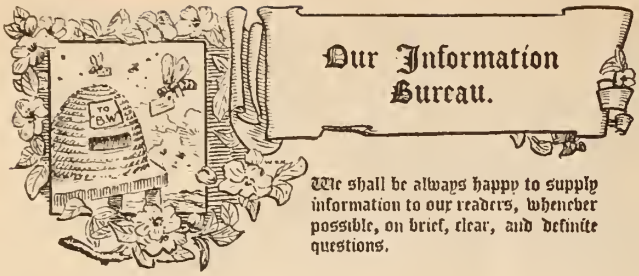
* As far as I know, this method is original; it was suggested by Zander's observation (**Der Bau der Biene**, p. 168) that Congo Red is a good stain for chitine, and Fantham and Porter's statement that the sporocyst is of a chitinoid nature (1912 Report, p. 64).



Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

HIVING BEES IN THE DUSK. It is the exception to have such an operation succeeding, and we can hardly imagine that there is ever an indication for it. A travelling box, a skep, or any other handy receptacle should always be placed close to the swarm, which should be protected from frosty or rainy weather during the night by a piece of American cloth, a board and sacks, etc., placed in a safe manner over the receptacle used. It is possible to take all this trouble safely by the aid of a lamp, an assistant, and the necessary appliances, until early the following morning. We have known bees to swarm at 8.45 a.m., therefore one should not risk a late attendance, lest the bees decamp. It is possible that they may find their way during the night into the travelling box if the latter is fitted with frames and furnished with stores. This, of course, will not be practicable if there is a risk of losing the box with the swarm next morning.......

THE FAMOUS GOVERNMENT LEAFLETS. It is no good throwing stones aimlessly at a system of beekeeping and management, which has more adherents than opponents, on the ground of complete ignorance. Although we have no admiration for such a system which we keep hammering, it is fair to observe that whilst some of its advocates are quite satisfied and some are fatigued, others argue that they fail to see why a weak nucleus with young bees full of pap should not be capable of raising economically at least one or two good queen cells, while the rest should be destroyed. A better solution for further enlightenment lies in greater research work. Will you lend such a cause your support ?

WAX EXTRACTING. The Solar Wax Extractor is admirable in a large apiary in the tropics It is economical in use, especially when there is difficulty in securing suitable fuel for working a large metal extractor. It is intended of course for melting down odds and ends of wax and separating it from crude débris for later refinement. There is more than one pattern of metal wax extractor and honey strainer with boiler on the British market which justify their claim of " making wax rendering a pleasure instead of a troublesome job, since at one operation the wax is secured in a fairly clean state."

BEES AND SPRAYING. The following extract (†) from the report of the Ontario Beekeepers' 39th Annual Convention will fully answer your query : Prof. Caesar, of Guelph, in discussing the question of bees and poison spraying, said that there is a difference on the subject. The first man to investigate this was Prof. Webster, of Ohio. He sprayed a whole tree and placed bees under it, and came to the conclusion that Paris Green killed the bees. Another experiment was made by Prof. Woodward, of California, in 1914. He placed several colonies of bees in the middle of an apple orchard that had been sprayed with arsenate of lead and thought that few bees were killed thereby. Another beekeeper in Ontario who also is an extensive fruit grower, says that he has sprayed his trees in full bloom and no injury has resulted to the bees. Prof. Caesar gave it as his own personal opinion that while spraying during fruit bloom might result in injury to the bees, such spraying is only necessary once in 20 years, and it is never necessary to use poison when the tree is in bloom. The use of a field mash for the destruction of grasshoppers, army worms, etc., was not in his opinion dangerous to bees working in the field, as the mash was applied before the bees commenced working.

WIRE EMBEDDING. In our opinion the Spur wire embedder is worse than useless. It never does its work properly, when so much depends in securing serviceable wax foundation on its means of support. The electric embedder provided with dry cells is fairly cheap and is accessible to almost any beekeeper. It does its work very well in cementing the supporting wires into the foundation.

For a large apiary where there is a big number of frames to be fitted, a powerful source of electric current is advantageous. The best results are obtained by working with an accumulator or by using the lighting supply by means of a transformer.

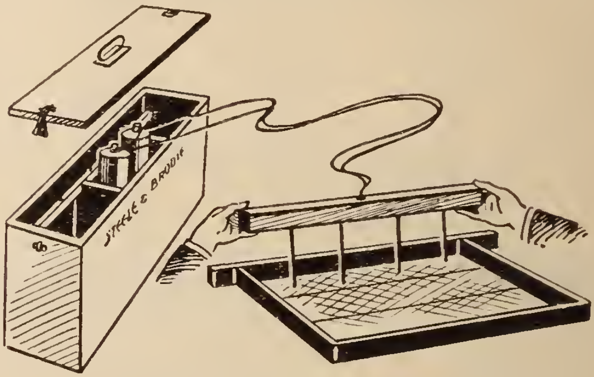


Fig. 53. Electric Embedder.

The Bee World.

THE OFFICIAL ORGAN OF THE APIS CLUB.

Edited by A. Z. ABUSHÂDY, F.R.M.S.

With the collaboration of : the Rev. John Beveridge, M.A., B.D., E.B : S.B.A. ; Miss Annie D. Betts, B. Sc. ; A. F. Harwood ; J. Herrod-Hempsall, F.E.S. ; W. H. Simms, B.B.K.A. ; and R. Whyte.

Literary Correspondence : Literary correspondence should be addressed to the Editor, accompanied by a stamped addressed envelope when a reply is expected. In view of the public character of this magazine and the almost overwhelming occupation of the editor, he relies on the co-operative spirit and good nature of correspondents in avoiding on the one hand unnecessary correspondence, and in helping on the other hand to reduce the postal expenses of THE BEE WORLD and **The Apis Club** which are exceptionally heavy.

Having regard to the limitations of our space, our able contributors will greatly assist by considering 500 words a maximum limit for any single contribution as an article. Letters to the Editor for publication should be very brief.

Business Correspondence : The Manager of THE BEE WORLD will be pleased to forward a list of charges for displayed advertisements to members of the Trade, and to reserve spaces for them on application.

The Supply of the Magazine : THE BEE WORLD is supplied at present only to members of **The Apis Club** at an annual membership fee of 7s. 6d. per annum, payable in advance. **Prospective members can join the Club at any time.** Back issues of THE BEE WORLD (second-hand or otherwise) as well as additional copies of the current number may be obtained, when available, by any member of the **Club**, on applying direct to its offices, at the cost of 9d. per copy, post free.

(†) " **The Canadian Horticulturist and Beekeeper.**" December, 1919.

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their school or nationality, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

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*** Membership of the **Apis Club** is open to all practical apiarists everywhere, and to all lovers of the Honey Bee. Annual Membership Fee: 7s. 6d., and includes free delivery of this Magazine, which is issued only to members of the **Club**.

Vol. I. No. 9. FEBRUARY, 1920. Monthly.

Editorial.

BEE DISEASES LEGISLATION IN GREAT BRITAIN.

At last the British Government have redeemed their pledge to hold a Conference of "representative" beekeepers for consultation before the introduction of legislation for bee diseases, after finally yielding to the storm of appeal for its introduction.

The official report of this Conference, which took place on the 6th of this month, is being published at present by instalments in the **B.B.J.** and we shall quote it in full in our next issue, since it is of considerable interest, not only to British apiarists but to beekeepers everywhere whether they enjoy, suffer from, or are still without State supervision. It is full of lessons which speak for themselves, and which provide a mixture of compliment to and condemnation of the whole proceeding.

Before tabulating our points of comment, it is fair to remark that there is a growing feeling among no few responsible men that since it is difficult to move the Government, we had better accept whatever measure they care to introduce as a beginning, and gradually improve on it from experience. This accounts for the unreasonable silence of many.

(1) Constitution of the Conference.—It appears as if finally recognising their obligations to the Beekeeping Community, the Government suddenly decided to compensate for a big waste of time, not by careful calculation, but by unparalleled haste over a vital matter. They discovered a list of Societies calling themselves "County Associations," which is quite true in many cases, and non-substantiated, nay quite unfounded in others, whose influence is negligible. A week's notice appears to have been given to the Secretary of each Association, asking him to invite his Committee to send two representatives. Beyond giving a general hint as to the character of the Conference, no information was supplied in advance. Any other body not labelled "Association" was not thought deserving of an invitation. The hundreds of beekeepers who do not belong to Societies did not count. The Trade which have thousands of pounds in the Industry were not considered fit for direct representation. The Bee Press and the Agricultural Colleges were not thought worthy of delegating representatives even without the right to vote. But a small group of people wrongly calling themselves a County Association and controlling, say, a couple of hundred stocks were believed fit to send two delegates! The invitation was readily accepted, and it stands on record that most of the delegates who were apparently flattered by the invitation attended the Conference without any mandate whatever from their members, and have ventured to vote, without authority, on a show of hands and to leave the meeting without the intention of reporting to their members for approval or otherwise. Such was the constitution of our "representative" Conference. Little wonder that much suspicion has been aroused and the lack of confidence in Government methods greatly strengthened.

On the other hand, the Government have been criticised for not extending their invitation to the **Scottish Beekeepers' Association**, but seeing that the Government do not propose to extend Legislation to Scotland without the consent of the Scottish Board of Agriculture, who are on the best terms with the **S.B.K.A.**, this criticism is not justified.

(2) The Conduct of the Proceedings.—Never before has a meeting which was, by an overwhelming majority, in agreement with a certain principle or with essential details of its application shown less wisdom and magnanimity in refusing a full hearing to their opponents. Valuable time was wasted in heckling, in discussing irrelevant matters, in rehearsing well-understood principles, but not in endeavouring to find out on what grounds should there be any objection to Legislation. Mr. J. B. Lamb was the only delegate to voice the fact that it was the duty of the Conference to give more hearing to those who were in opposition, however small their number may be, but his appeal was disregarded. The attitude of the gathering was emphatically one of eagerness to vote in favour of an undefined Legislation, in as short a time as possible, and to run back to their homes merrily.

(3) The Problems Raised.—We have before us a copy of the proposed Bill marked "Confidential." This was never brought to the notice of the delegates until they actually attended, although, at least in the case of the **Cambridgeshire Beekeepers' Association**, a request for guiding information was previously made, but disingenuously declined. We do not blame Captain Wellington for his unreasonable excuse. We can only blame our "representatives" who were easily led to make up their minds on a vital question affecting the future of the industry in a few hours without any regard to their constituents. From the beginning, Mr. Cowan courteously hinted at the impossibility of mature judgment at such a short notice. Yet those representatives who had the courage to shout at their opponents and to fetter unbiassed discussion are beginning now to decline responsibility and to shift it to the shoulders of others. The biggest bomb is usually dropped on the offices of the **B.B.K.A.**, whose Secretary does not appear to have hindered a free discussion in any form, and who is credited with saying that had he got his own way, he would have had every beekeeper in the country represented, just as he would have had compulsory notification introduced. On the other hand, those who did not fill their seats, who did not have the courage to raise their voices but can well grumble afterwards, and who never thought of protesting at the very short time permitted for the discussion, are escaping lightly.

Despite all this, a few level-headed members, such as Dr. Rennie, Mr. Joseph Price and Mr. Silver made good use of the occasion, since the proposed Bill without the annotation of Dr. Keeble and Captain Wellington is a masterpiece of official blunder. But even with these explanations we are not in reality advanced a single step forward. Explanations are one thing, and the indefinite text of a Bill, which at any time can certainly be adapted to another practice, is a different matter.

(4) **The Present Issue.**—We shall be greatly surprised if the present Bill were to be defeated in Parliament, which is behind the Government. That more than one better alternative measure could be suggested there need be no doubt. But the issue now is whether such a Bill is to be accepted on the basis of promises or on the basis of its text, which is unfortunately most indefinite and autocratic. No unbiassed person will hesitate to demand the incorporation of better guarantees in the text of the Bill, instead of the Minutes of a Beekeepers' Meeting. On the other hand, to concentrate attention on the defeat of the Bill will not only renew a powerful party strife, but will also lead to the Government entirely declining to listen to the Craft as a reprisal for questioning their wisdom.

We consider the proposed measure to be entirely based on faith in personalities that are not permanent. This is clearly a wrong principle through which the Craft may have to pay dearly, if in future they are disappointed in new officials who have to be entrusted with their destinies. We trust therefore that the Secretary of the **B.B.K.A.** will use again his influence and endeavour to secure for British beekeepers better guarantees included in the proposed Bill itself.

MARKETING HONEY. British beekeepers are rightly complaining of the present unfair competition with imported honey, a good deal of which is not labelled with the Country of origin and is not true to its name, yet seems to appeal to the Grocery Trade in view of its "right" price. Everything is suggested for suppressing this unhealthy practice except the right course of Government supervision, economical production and co-operative marketing which latter may well be developed through the development of **The Apis Club.** Beekeeping Associations in the United States and the Colonies, as well as in other countries, are not thought of as decent media for pressing on their own Governments to protect their reputation by introducing strict grading rules for exported honey. Similar restrictions here are very desirable as no article bearing the label "HONEY" which proves to be otherwise, is fit for anything but condemnation by our food inspectors. When such fair restrictions are introduced, unfair competition is bound to stop. But as to taxing imported honey, good or bad, it is a selfish policy which is of no national or international value whatever, and for which the consumer has to pay.

Enforcing the popular movement initiated by Mr. Claridge for labelling imported honey with the Country of origin will, on the other hand, neither offend nor injure anyone except the real offender.

INTERNATIONAL EDUCATION. The Editor of THE BEE WORLD is in communication with several leading beekeepers in different countries regarding the constitution of the Board of Collaborators of this magazine. Very enthusiastic replies are being received from every direction. It is hoped that if the General Conference of members of **The Apis Club** consider this national and international work fit for development in this country, a better service will be rendered during its second year by reflecting more guiding lights from different lands and by creating greater international co-operation and concord.

No one will be more sorry than the writer, if the country which has given birth to this periodical has to disclaim it and force its emigration to another home, probably to the other side of the Atlantic. The matter is in the hands of the British Bee Community and not only for the General Conference of **The Apis Club** members.

WINTER EXPERIMENTS. We wish to draw special attention to the critical article which appears in this number from the pen of Mr. Frank C. Pellett, the well-known naturalist, bee journalist and critic. Commenting on it, we need only add to previous notes that although we do not possess at present a single colony of bees on metal combs, it is only fair to remark that the bees have done very well even during the coldest part of the season, only to fall a prey to starvation when candy feeding became unavoidable. No trace of disease could be discovered.

We do not possess either a single colony of Egyptian or Egyptian-hybrid bees and the same reasons apply here again. Several Italian as well as few Dutch colonies have shared the same fate. Weak colonies on the other hand with comparatively good stores have managed to survive. Regarding Egyptian bees, it is interesting to record that we have entirely failed to discover a tendency on their part to "detached clustering." Yet the bees were sufficiently hardy to fly at a temperature less than 50° F. A previously unrecorded bad feature in them is their puzzlement at low temperatures in discovering the hive entrance, until they get chilled after several futile attempts. The Egyptian bee seems to resemble the Dutch bee in her call for a low temperature of about 40° F. in order to restrain her from flight in winter under unfavourable circumstances.

Several visiting members of **The Apis Club** and others have had repeated opportunities to witness the conduct of experiments, and to inspect reserved specimens in our museum.

Original Contributions.

Originality is the one thing which unoriginal minds cannot feel the use of.—J. S. Mill.

The Bee Diseases Bill, 1913. †

By THOMAS HOLT.

It is not easy to deal adequately with a highly technical piece of Parliamentary draughtsmanship, commonly known as a Government Bill, within the limits of a page of THE BEE WORLD, particularly when one must point out its faults and also suggest constructive amendments that will render legislation the boon it is wished to be. To summarise its faults is not difficult, but for one who does not approve of its basic principles, it is well nigh impossible to engraft the "best" amendments on its unworthy foundations; for this reason it may be right to suggest "amendments" in the nature of recommendations that would necessitate a completely new form of bill, and more so, if the by-no-means small restrictions which progressive beekeepers would have us believe they are almost dying to have imposed upon the craft, are ever to result in the desired boon so long hoped for.

Before useful criticism can be offered on the 1913 Bill one must get a clear grasp, in outline at least, of its provisions; its preamble states its object was **to provide for the prevention of the introduction and spread of pests and diseases affecting bees,** and it purposed to accomplish this by enabling:—

(1) The Board of Agriculture to make such orders as they might think expedient for preventing the introduction and spread of Bee Diseases, including the prohibition and regulation of the importation of bees and appliances;

(2) The destruction by the Board or the local Authority, without payment of compensation, of any colony of affected bees and affected receptacles (other than a moveable comb hive).

(3) The destruction by the Board or Local Authority, subject to payment of compensation, **of bees or any other thing** which in the opinion of the Board or Local Authority may spread disease, or be liable to become infected by disease;

(4) The Board to prescribe the manner of assessing compensation in default of agreement;

(5) The Local Authorities under the Diseases of Animals Act 1894, to be the Local Authorities under the Bill (these Authorities are—the Corporation of every Borough outside London having a population **in 1881 of 10,000 and upwards** and for the residue of Counties, the County Councils); each of the numerous Authorities must appoint such Inspectors (subject to approval by the Board) and other Officers for the execution and enforcement of Orders under the Act;

(6) Powers of entry of an Inspector of the Board or of the Local Authority, accompanied if thought fit by an expert adviser;

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† Prize Essay.

FAULTS OF THE BILL.

(7) The precise form of any Order the Board might make is not disclosed, and could not of course be made until after the bill had become an Act; whatever merit the Act possessed might be destroyed by the terms of the Order, to which no opportunity is given for objection before becoming operative. If a model form had been scheduled to the Bill with power in the Board to make alterations to meet any emergency, such alterations to be laid on the tables of both Houses and not to become operative if objected to by either House within, say, 30 days. Beemen would have had some opportunity, though limited in time, to make representations either for or against; the Bill savours too much of legislation by bureaucracy.

(8) There are no definitions in the Bill (apparently wild bees come under its control); e.g., any kind of receptacle that will take a standard frame could be a "moveable comb hive," and no matter how badly infected, even if filthy through non-management or gross mismanagement could not be dealt with under (2) above, but by calling it a "thing" under (3) above, it could be destroyed on payment of compensation. The pestilence that walketh in darkness cannot be compared to some of the horribly kept contraptions passing under the name of moveable comb hives one sometimes sees, and to give compensation for this kind of "progress" instead of inflicting a fine is in direct conflict with the preamble of the Bill.

(9) The worst feature of the Bill is its form of administration by the Local Authorities named, whose expenses would be payable out of the local rates; in Lancashire there would be upwards of 25 independent Authorities and 12 in Kent without any necessarily co-ordinated policy or co-operation, each compelled to appoint an Inspector; it is true several might combine and appoint the same person, but the area he must cover must be limited if he is to be effective, and to be really effective would probably be prohibitive in cost. Then the Inspector need not be a beeman, although it is hoped the Board would not approve of his appointment unless he were (see 5 above). It is quite clear that neither an Inspector of the Board nor of the Local Authority need be an expert, for the Bill expressly provides he may on his visits take an expert adviser with him (see 6 above), but the Bill is silent as to the qualifications an expert adviser must possess. The form of administration, upon which the success of the measure would really depend, is so extravagant, that its cost would be out of all proportion to the benefit obtained, and one fears that the cry "save the rates" instead of "save the bees" would ultimately prevail.

RECOMMENDATIONS.

To effectively attain the desired results, drastic measures are needed, and it is submitted can be better achieved by bee men themselves, in which goodwill and forbearance on the part of all must play an important rôle. The 1913 Bill begins too late or in other words starts almost at the very end. The powers granted should be mainly educative and not punitive and should be administered on lines as at present (but better organised) by a National Body of Bee men at the expense of Beemen themselves, and perhaps Manufacturers, assisted by State subvention (If this Body could have a State subsidy equal to one-tenth of the cost of administering the 1913 Bill, what could it not do!) This Body should be some Society like the B.B.K.A., but it should change its name by leaving out "Keepers" from its title, and should adopt some such name as "British Bee Association" or "National Bee Society" to clearly indicate that it includes the whole realm of apiculture. But the Association as at present constituted has no legal entity, and until it has, it could not be entrusted with the administration of an Act of Parliament or Public monies. It is therefore imperative as a necessary preliminary that it should become incorporated, by Charter or otherwise, preferably the former, taking thereby varied powers which later, if and when it had proved its value and further powers become necessary, could be supplemented by a Public Act to enable it to control the whole Bee Industry of the Country, working through real live County Associations, all of which must be in affiliation with it; each County Association would have numerous well organised District or Local Committees, the more numerous the better as covering a smaller area, each area possessing one or more competent experts.

Granted the necessary powers, a sketchy outline of the scheme, which one believes could be carried out almost at once with little or no difficulty in a County like Kent, is as follows:—

(10) No person to keep bees unless registered annually with his Local Committee, for which fees shall be paid, varying according to number of hives kept.

(11) The Local Committee would give certificates of approval to the appliances used, and subject to reasonable satisfactory management, would make suitable compensation for destruction of bees and appliances so ordered by them; so as not to restrain trade or unnecessarily interfere with the liberty of the subject, appliances not so approved would not receive compensation on destruction; (special considerations to govern purely temporary hives); the Local Committee subject to necessary safeguards to have power to order destruction, prohibition, etc.

(12) The parent body would grant certificates to Manufacturers for their products, if approved and well made, and this certificate would be effective throughout the Country; the approved product might be stamped "Allowed by Parent Body" so that all might know. There is opportunity for real work here; many appliances of good principle are of poor material and badly made; to take these off the approved list, would in most cases have the desired effect.

(13) The Parent Body should aim at a higher standard of educational value, particularly in granting expert certificates; there is abundant room for improvement here; it should not rest content until every local Committee, or indeed every beekeeping village has one or more experts of the right standard, which should include acquaintance with, and possession of, a microscope. It should aim at carrying out scientific research, experiments, chemical and bacteriological examinations; it should specialise in bringing about improvements in apparatus, manufacture and technique of construction, including size, thickness and material; when this latter is undertaken, the much talked of "standardisation" will be brought nearer.

(14) As all beekeepers would belong to the Parent Body through their Local Committee, they should be supplied from time to time with literature, and this should always include an account of what the Parent Body is doing to induce interest.

(15) The National Body might perhaps be empowered to trade, but this would require greater consideration than can be given at present.

Legislation would be needed to clothe the Parent Body with powers to control effectively the Bee Industry, and one would not object to these powers being obtained through the Board of Agriculture on the principle of the 1913 Bill, subject to the amendments beforementioned with the substitution of the Parent Body as the Authority for carrying out its provisions; but the Parent Body is not yet ready for this important work, and it will take sometime before it can be; one believes that Bee men will have to do a great deal more for themselves than they have ever done before if they are to gain the confidence the position they aspire to will demand

Some of their aims can be achieved without legislation, if, and if only, they provide the sinews, and this could be helped by a system of fees at a rate that intelligent bee men would not resent, for services rendered both by the Parent and Local Body, it always being understood that the amount of work to be done is limited to the capital available. Frequent contact among bee men of the right type would engender the necessary capital. One makes no aspersion against existing Bee Societies, as one knows they have done excellent work in the past often under trying and difficult circumstances, but the position of the bee man would be greatly enhanced, if his National Association were incorporated by Royal Charter, and thus clothed with legal estate, and that soon. One has much more to say but it is feared this article is already too long.

THE METAL COMB.

By FRANK C. PELLETT, Author, "Productive Beekeeping," etc.; Associate Editor, "The American Bee Journal."

Occasionally a letter comes from our friends in England asking why we do not have more to say in regard to the metal comb. In answer it is only because we have not as yet been able to determine fully its value. If its objectionable features can be overcome, there is so much of possibility in the invention that it is difficult to forecast its influence upon the development of beekeeping. However, in a climate like that of America, where there are great extremes of heat and cold, it is doubtful whether any comb made of metal can ever be successfully used under all conditions. Our climate varies from an occasional drop as low as 60 degrees below zero (Fahrenheit) in Montana, to regions where frost is almost unknown in Southern California and Florida. In some sections there is a great variation in temperature from day to day during the honey flow in midsummer. In some of the higher altitudes it is very warm during the day but cool at night, the temperature falling almost to the frost line.

It has been my good fortune to visit leading beekeepers in many of the principle honey-producing regions in widely separated sections, and I have been much interested in the behaviour of the bees under the different conditions represented by the more than three million square miles of territory represented by our home country.

In moderate temperatures the bees readily occupy the metal combs and fill them with honey and brood. From the little I know of England I gather that the climate there is moderate with neither very high nor low temperatures. Under such conditions one would expect much greater success than in our more changeable climate of Illinois. I have recently visited a number of beekeepers who produce honey on a large scale in the State of Montana. Not one beekeeper did I meet in that region who had been successful with the metal combs. Several had tried them but they reported that the supers got too hot during the day so that the bees could not ventilate them properly and keep the combs sufficiently cool to continue storing. They stated also that the brood died apparently from the variation in temperature which made it impossible for the bees to maintain a uniform heat in the brood nest. It is a well-known fact that aluminum is one of the best conductors of heat. These combs are accordingly extremely sensitive to changes of temperature. Such changes may easily be greater than the bees are able to control.

In Texas, on the other hand, where weather conditions are very different, there are many beekeepers who are very enthusiastic in regard to the metal combs and who give favorable reports. Conflicting reports come from California. Some beekeepers report success, while others have had failure. However, California represents a very wide range of weather conditions and this may account for some of the difference in reports.

Under these conditions it is easy to see why a man might be slow in expressing an opinion regarding the metal comb. If it has merits, it should not be condemned, while if it has not, it would be unwise to endorse it. It has not been sufficiently tested as yet to demonstrate its real value.

The advantage of a comb which could be sterilised without destroying is very apparent. In fact numerous advantages of a permanent comb will at once present themselves. However, there are some serious difficulties to be overcome. The high cost; tendency to permanent damage, and sensibility to changes of temperature must all be considered in connection with the best thing of the kind which has so far appeared.

The Cyprian Bee.

By M. G. DERVISHIAN, NICOSIA, CYPRUS.

In my capacity as a long experienced and specialist breeder of Cyprian Bees, I have pleasure in contributing this brief article to THE BEE WORLD, for the purpose of providing first hand information on its subject to masters and students of apiculture, who wish to build its future on unbiassed study and actual experience, as different from the present state of wholesale imitation and obstinate conservatism.

Though an apiarian with close connections with bee culture for over forty years, I have always found my health and happy recreation in keeping bees, and have continuously found them faithful servants in supplying my large family with pure honey and in paying for all my apiary expenses from the proceeds of the sale of a small number of Cyprian queens to various Countries, and especially to some leading queen breeders. This is my qualification for giving (for what it is worth) the following testimony to the Cyprian Bee.

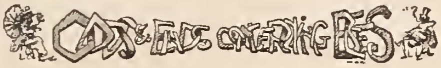
I learned mailing queen bees from the late Mr. Frank Benton, when, 35 years ago, he used to visit this Island for Cyprian queen bees. Later, he was the Assistant Entomologist employed by the Department of Agriculture, at Washington, U.S.A., and while so, he requested me to mail on various occasions a large number of Cyprian queens, for the use of the said Department, also for his private queen rearing apiary, until he asked me in 1918 if I were prepared to send queen bees to his address at Florida, where he died before he could receive my reply. His death is a great loss to the Beekeeping Fraternity.

Mr. Frank Benton in his work entitled "**Manual of Apiculture,**" published by the U.S. Dept. of Agriculture, says: "Bees of the race native to the Island of Cyprus have produced the largest yield of honey on record from a single colony in this Country (America), one thousand pounds in one season. Everyone who has fairly tested them admits their wonderful honey gathering powers and persevering courage in their labours, even when the flowers are secreting nectar but scantily. They winter well, and defend their hives against robber bees and other enemies with greater energy than any other known race."

By experience, I venture to say, when one learns how to manipulate Cyprians easily, and without the use of much smoke, he will be tempted to reject all other races of bees. What the Cyprians require is **gentle and slow manipulation,** taking every precaution to avoid the crushing of bees. This is what the whole art of their manipulation consists of.

The Cyprians, to my eye, are the most beautiful and the yellowest five-banded bees. In Cyprus, there exists no other race of bees, therefore the Cyprians are pure and thorough-bred. Epidemic diseases amongst bees are unknown in this Island. These are high qualities which have more than sufficed to maintain my regard to them, despite my regular study of international bee culture.

Everyone is entitled to give his favourable and unfavourable experience of various races of bees. Unbiassed evidence based on experience is of great value. On the other hand, arguments based on hearsay and undissected quotations will only stimulate idle curiosity, and will do more harm than good by replacing the desirable spirit of research by one of misleading contentment. I shall be pleased therefore to see a criticism of these brief notes from any of your expert readers whose personal experience of the Cyprian Bee, whether in breeding, honey production, regular response to intelligent management, or good resistance to bee diseases, has ever been ungratifying. Nothing prevents me from championing other races of bees were it not that I cannot alter my gratification into a disappointment. I am sufficiently non-orthodox to remain open minded, and I write these notes and invite their criticism for the sole purpose of serving the high ideal of KNOWLEDGE.



By R. WHYTE.

LANGSTROTH'S TEN MAXIMS.

1. Bees gorged with honey never volunteer an attack.
2. Bees may always be made peaceable by liquid sweets.
3. Bees when frightened by smoke or by drumming on their hives fill themselves with honey and lose all disposition to sting, unless they are hurt.
4. Bees dislike the offensive odour of sweaty animals, and will not endure impure air from human beings.
5. Bees dislike any **quick** movements about their hives, especially any motion which jars their combs.
6. The Beekeeper will ordinarily derive all his profits from stocks strong and healthy in spring.
7. In districts where forage is abundant only for a short period, the largest yield of honey will be secured by a very moderate increase of stocks.
8. A moderate increase of colonies in any one season will in the long run prove to be the easiest, safest and cheapest mode of managing bees.
9. Queenless colonies unless supplied with a queen will inevitably dwindle away, or be destroyed by the bee-moth or by robbers bees.
10. The formation of new colonies should ordinarily be confined to the season when bees are accumulating honey, and if this or any other operation must be performed when forage is scarce, the greatest precautions should be used to prevent robbing.

The essence of all profitable beekeeping is contained in the Beekeepers Golden Rule—**"Keep your stocks strong."**

NATURALLY REARED QUEENS.

In "Some Facts about Queens" Mr. Barratt in the July issue of THE BEE WORLD says: "The deplorable state of beekeeping at the present time emphasises the paramount importance of the queens heading our stocks, and we must ever have in mind the inevitable fact that what the queen is, so the hive will be, and whilst a section of beekeepers advise the rearing of queens from a handful of bees in a nucleus, the fact remains that a queen **cannot** breed strong, healthy, disease-resisting bees unless she is raised by a large force of bees, **and these in a fit condition** for this important duty." I am entirely convinced that everything in successful beekeeping centres round the queen. Queens reared as they ought to be should retain their vigour, as a rule, till their third season at any rate. In this connection let us remember that long-lived queens produce long-lived workers; the converse of this holding good that workers from forced degenerate queens are short-lived, and though these later may carry on more or less passibly during Summer, they invariably fail to winter well, dwindling in Spring so that it is impossible for the stock to take advantage of fruit bloom.

PREVENTING UNDUE INCREASE.

The prevention of increase by returning swarms to the hive they left is often desirable. Hamet, the Parisian Beekeeper, in his **"Cours D'Apiculture,"** published 70 years ago, describes a method of returning swarms to their parent stocks. He considers it necessary to return all secondary swarms in order to secure strong stocks and prevent "swarming to exhaustion." His practice is to hive the swarm in an ordinary box and on the evening of the **next** day return the swarm to the stock from which it came by flinging it down in front of the hive. The explanation is that by the end of the second day the bees have, as a rule, destroyed all queen cells and have kept one young queen only. When the swarm is thus returned unexpectedly, the two queens meet and settle who is to be the reigning queen.

The method often works with primary swarms, only, instead of returning the swarm the **following** evening, let two days elapse, or even three. If additional space and ventilation be given this plan of preventing increase works well, although not invariably successful. Hamet, I may say, described his method as only applicable to secondary swarms, considering prime swarms the natural means of increase and entirely desirable. Would that there were more of Hamet's opinion in Beedom; we would then, I am convinced, hear less of what we term, I.W.D.

HIVES IN EXCELSIS.

Judging from the number of attempts made lately by really practical Beemen to produce a handy serviceable hive, the need seems clamant for a hive that will be at once simple to manipulate and reasonable in price

The "Manley" and the "Wormit Commercial" are excellent hives of a simple type—cheap and good. I have one of each before me as I write.

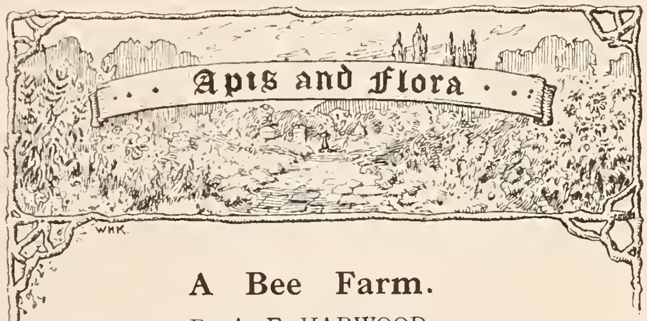
Ever since Dr. Newbigging wrote that article in the August number of THE BEE WORLD on "Scottish Beekeeping" I have been all agog to read the detail description promised of his hive. However, I have now had an opportunity of examining the hive itself and had its "points" explained by the Doctor himself. Certainly, the hive bears out all, and more, than he claims for it in the aforesaid article.

Knowing the inventor by repute, I anticipated an improvement on existing hive construction, but I did not reckon on anything so revolutionary as the article itself proved to be.

The Doctor set himself the task of producing a hive suitable for safe and easy transportation, involving as this does travelling by road and rail, as well as a hive complete in every detail and simple to manage. I was surprised at the detail of it and every detail of supreme value in lessening labour and saving time.

Dr. Newbigging can certainly take credit for solving many difficulties of beekeeping, especially Scottish beekeeping.

However, I hope with many others to see shortly that promised article on the "Expeditious" hive and so appreciate more the score of good points which it embodies: simple and effective ventilation, bottom feeding, interlocking, hive register, always ready and at hand, etc. I understand the Doctor has in the meantime protected its various original features, so that publicity now entails no danger.



A Bee Farm.

By A. F. HARWOOD.

It is highly probable that this article, in so far as it attracts the attention of orthodox British beekeepers, will be received with marked disfavour.

I am proposing the systematic cultivation of buckwheat (**fagopyrum esculentum**) for its nectar.

Already a leading authority in apiculture has said "we don't want buckwheat honey here." The reason is not far to seek: the standard for English honey is white clover and it is feared that production of an article so different in colour, flavour and aroma as that obtained from buckwheat may be a disturbing factor leading to a lowering of this standard.

May I give a personal experience relative to buckwheat honey? Some few years ago, it was my fortune to be in Brittany, responsible for the entertainment of about eighty people. I had to travel widely, by sea and land, and for the better discharge of my duties as well as for my own satisfaction, I made a point of studying closely the Breton at home. Many are, or were, beekeepers: these I always visited if and when possible, whatever their station or their methods. The latter varied from primitive skep-work to the latest American practice and equipment. The former ranged from a *passeur* (ferryman) to a Count, whose apiary was of more than local renown. With a desire fated to be unsatisfied, to see this installation, I called at the Chateau de K, only to learn that Madame being critically ill, the husband could not leave her and so had to defer showing me the apiary. I was however regaled with some of the honey therefrom, and enquiring what was the output and outlet, was told that Brest consumed the bulk, Le Conquet taking any odd quantities. Learning the name of the vendor, I went that evening and secured all he had, putting a supply on the hotel table for my flock. These had not previously tasted Breton honey and, whether from ignorance of honey grading or from bad taste I say not, showed their appreciation of the novelty by making an end of it very rapidly.

Now this honey was certainly in the main, if not wholly, derived from the *sarrasin* or *blé noir*. Writing of this incident I seem to hear again the clear voice of the buxom chambermaid at the Hotel de Bretagne, who waiting on the landing with my coffee would sing :

> " Car la Bretonne
> Est si mignonne
> Comme la grenade
> Ou le blé noir."

For myself, a pancake of buckwheat flour, sweetened with buckwheat honey, as I have had it at St. Renan, Plougastel, Camaret and elsewhere, is a rare treat unobtainable in England.

If honey is to become an article of common consumption in this country, at a price near about that of sugar, syrups and jam, it is to buckwheat that we must look to furnish it. Unless, rather than tolerate a rival to white clover, it is preferred to continue the importation of the unappetising mixture of honey, larvæ, *disjecta membra*, etc., which is offered by certain multiple shop concerns as "Pure Honey."

Root, in "A.B.C. & X.Y.Z. of Bee Culture," devotes eight pages to buckwheat. I would refer anyone interested to that invaluable publication and content myself with a few quotations :— " So great is the acreage of it in New York, that anywhere from 2,000 to 3,000 colonies can be kept in some counties and this means hundreds of beekeepers who are specialist honey-growers and farmers, almost all of whom keep at least a few colonies. The latter class reason this way : That the growing of buckwheat as a grain is one of the most profitable branches of farming ; that the nectar in the blossoms properly belongs to them and if they keep a few colonies they will virtually get two crops from one field " (p. 131). " It is always a paying crop for the grain in nearly every locality, where ordinary grain crops can be grown " (p. 132) ; " and owing to the fact that it can be depended on almost absolutely for a yield of honey when even basswood or clover fails, as it does sometimes in any locality, the beekeeper is able to make, at least, expenses and something besides " (p. 132). E. R. Root and J. H. Lovell, joint writers of the articles from which I have made the above extracts, are not cranks ; they **know.**

The Press Mirror.

The Western Honey Bee.

LEGISLATION FOR BEEKEEPERS.

Two different propositions are incubating for new legislation affecting the bee industry, and more coming. That is all right ; if the new Bills are conceived in the true interests of the beekeeping fraternity, and are given wide publicity before being pushed before the State legislature, well and good. But let us have no concealed jokers therein. Put all proposed legislation affecting the bee industry before the beekeepers themselves and get their opinion. Wise bee men have not forgotten recent previous attempts to force bad measures through the legislature without proper publicity being given. They will accordingly want to know the nature of proposed new measures before any attempt is made to jam them through. Let the sunlight of publicity shine upon them in advance.

L'Apicoltore.

THE SIZE OF THE QUEEN IN RELATION TO THAT OF HER WORKER OFFSPRING.

In an interesting article contributed to **L'Apicoltore,** Sig. Riccardo Ricci discusses the relation between the size of the queen and the size of her worker offspring.

The observation has been made by various parties that quite frequently a fine large queen does not produce the nice large worker bees which are to be found in colonies whose queens are small and by no means well proportioned. Ricci, aware of this fact, was concerned with possible causes.

Last Autumn Ricci had occasion to transfer over one hundred skep stocks to bar frame hives, and, as he was personally familiar with the districts whence these skeps came, he was in an excellent position to put the most logical construction on his observations during the process of driving. A further most valuable fortuitous circumstance was the fact that these 110 skeps comprised two lots from two locations almost within bee flight of each other and differing only in altitude and consequent variation in flora. In the one case, there was practically nothing for the bees after the late spring flow ; whilst in the other there was abundant honey from chestnut and heather during summer and early autumn.

Ricci noted that without exception the skeps from the first were poor in honey and bees ; whilst those from the second were crowded with bees and full of honey. He excludes the possibility of different varieties of bees owing to the proximity of the two apiaries. Having a large amount of material to deal with Ricci decided to select the best skeps to be dealt with separately for breeding purposes, and in doing so he was struck by the fact that the most prosperous skeps, i.e., the strongest in bees and stores, contained the largest bees and the most insignificant queens, and that the poorer skeps had the smaller bees and larger queens. The comparisons were made when there was excluded any possible variation due to gorging on the part of the bees.

Ricci goes on to explain that, apart from the question of the influence of heredity which he thinks can almost be excluded in this case, the size of the bees was determined by larval nutrition. It is well known that the latter has a marked effect on certain flies. Ricci suggests that anyone may prove this by keeping under observation a few beans attacked by " L'aria irresecta." If the generations of this insect are allowed to follow on one another, the difference in the size of the earlier and later ones soon become apparent, due to the gradual impoverishing of the food supply.

Perhaps we cannot do better than give Sig. Ricci's words :— " Is this reproduced in the case of bees ? In the latter case we are dealing with different conditions. The bee larva is not abandoned to its own resources ; its nutrition is controlled by the nurse bees. It is reasonable to suggest, however, that what happens is this : There are abundant stores in reserve ? There is a bountiful supply coming in ? Very well, let there be abundance ! The nurses become liberal, do not stint the food, and the hatching bees are not undersized. But if the reserves are small, the income little or none, the nurses know how to, and do, limit the food supplied to the larvæ to the biological minimum. Result, a brood hatching into undersized bees. Is it probable ?"

Sig. Ricci thus raises an interesting point not irrelevant to the theory propounded by Miss Betts, B.Sc., in the December Number of THE BEE WORLD in regard to the mechanism of swarming. Both are not without importance in connection with the theory that I.W. disease is induced by the manipulation of a colony in such a way as to stimulate the bees beyond their powers limited by their number, their stores and the available income.—H. M. Stich

The British Bee Journal.

BEE LEGISLATION.

By C. Harrison.

You are to be commended on throwing open your columns to both advocates of legislation and opponents alike, and it is somewhat difficult to decide which side furnishes the stronger argument in favour of legislative action. It is curious to notice the fallacies into which so many of our opponents fall—fallacies which, if carried to a logical conclusion, would lead to all sorts of absurdities. Take, for instance, the letter of Mr. Fisken in your issue of Feb. 5th, 1920, who propounds the axiom that "knowledge should surely precede action." If this is Mr. Fisken's rule of life, some fine morning, on opening our newspaper, we may come across something of this sort:—

ALARMING FIRE IN WESTERTON.

WHOLE TOWNSHIP DESTROYED,

Exciting Scenes, etc., etc.

About 1 a.m. this morning smoke was observed issuing from a house in —— Street in the occupation of Mr. F —— and family. An alarm was raised, and the local fire brigade was quickly on the spot (beg pardon—scene of the conflagration). In the meantime Mr. F —— and family had with difficulty been rescued from the now furiously burning building.

The origin of the fire being a complete mystery, and Mr. F —— having no *knowledge* of its origin, refused to allow the fire brigade to take any *action* until the cause of the conflagration could be ascertained, with the result, owing to the high wind prevailing at the time, the fire rapidly spread from house to house until the whole township was involved.

Is this so very far-fetched?

The American Bee Journal.

BEEKEEPING IN JAPAN.

By Kennith Hawkins.

Add to your problems that of such heavy rains as to prevent good honey flows in many localities and to necessitate the construction of special waterproof hive covers, and you will get a glimpse of Japanese beekeeping. These problems are explained in a most interesting letter just received from Yasuo Hiratsuka, of Tara, Gifu-Ken, Japan.

The apiary owned by Mr. Hiratsuka is located in the central part of Japan, where the bees begin breeding up by the latter part of February, in a normal season. The principal honey flow comes from "Genge" or Japanese clover, which begins blooming about April 20th, and lasts until well into June. The swarming season is also coincident with this flow, as in the white clover regions of America.

In many localities there are earlier flows from rape, about April 15th, which change to some extent the swarming season of the Japanese beekeeper. According to Mr. Hiratsuka, in the mountainous portions of Japan, chestnut and persimmon are important sources of nectar, as in Virginia of our own country. He adds, however, "under normal conditions these will not do so well, because of a long rainy season at the same time." After the Japanese clover flow in his own locality, there is no other surplus flow that season, he says.

A number of labels for his honey containers, printed in English and Japanese, are included with his letter. American style hives and supplies are used in Japan, says Mr. Hiratsuka, except for the covers ...... The hive covers appear to be augmented, for shedding water, by roofs of matting; flat covers are never used. He likens his season and conditions to Alabama of our own States, except for shorter flows. Much interest is expressed in beekeeping in America and in literature on American beekeeping, which has been sent to Japan.

Proceedings of Associations and Clubs.

THE CONSTITUTION OF THE APIS CLUB.

The Annual Conference of members of **The Apis Club** in the United Kingdom will be held on Saturday, May 29th, 1920, at the Central Hall, Westminster, which will be open at 2 p.m. The chair will be taken at 2.20 p.m.

AGENDA.

(1) Report and Statement of Accounts.
(2) The Constitution of the **Club** and its future activities.
(3) Election of the Executive Council.
(4) Selection of headquarters and offices.
(5) Scope of co-operation with the British, Scottish and Irish B.K.As. and with leading Associations abroad.
(6) The future of THE BEE WORLD.
(7) Any other business.

The following is a draft of the proposed Rules and Regulations of the **Club**. Members are requested to thoroughly scrutinise this draft so as to be able to make helpful observations at the General Meeting with a view to introducing any desirable amendments which the Conference may decide upon. Members abroad are cordially invited to send their criticism to the Secretary.

(1) TITLE.

The title of this International Institute shall be **The Apis Club.**

(2) OBJECTS.

(a) The stimulation and conduct of research work in bee culture.

(b) The development of scholarly and industrial co-operation amongst members of the **Club**, both at home and abroad, with a growing scope corresponding to the increase in membership from different lands.

(c) The uplifting of the standard of beekeeping in the United Kingdom, by the publication of educational literature and by other means of instruction.

(3) COMPOSITION.

Members. Membership of the **Club** shall be open to all practical apiarists everywhere and to all lovers of the Honey Bee.

Associates. Associates of the **Club** are members who secure its Diploma in Bee Culture.

Scholars. Scholarships of the **Club** for conducting research work shall be limited to its associates by competitive examination.

Fellows. Fellowship of the **Club** shall be limited to distinguished researchers in apiculture.

(4) CONSTITUTION AND POWERS OF THE EXECUTIVE COUNCIL.

(a) The business of the **Club** shall be conducted by an Executive Council elected at the Annual Meeting and shall consist of 24 Councillors as follows:—Hon. President, Hon. Vice-President, Chairman, Vice-Chairman, Trustees, Organising Secretary, Associate Secretaries, Treasurer, and of additional representative delegates as defined in article 5.

(b) The Executive Council shall meet at least quarterly at the offices of the **Club** in order to review and decide on its current finance, the conduct of the **Club's** work, and on any other matter which is not confined to the sole decision of the Annual Conference of members. A month's notice of the Agenda shall be given to each member.

(c) A special meeting of the Executive Council shall be convened for any urgent matter if seven councillors mutually decide on its convention. Not less than one week's notice of the Agenda shall be given.

(d) The Executive Council shall have power to elect, re-elect, or revoke, at any of their meetings, special committees for the efficient conduct of the work of the **Club**, by a specialised division of labour. and to delegate to them any of the powers of the Executive Council.

(e) The Executive Council shall have power at their meetings to formulate, amend, or revoke any bye-laws in conformity with the Rules of the **Club**.

(f) Seven Councillors other than delegates shall be deemed necessary to form a quorum of the Executive Council.

(5) REPRESENTATIONS.

(a) Any Beekeeping Society or Institute in the United Kingdom which has an official membership in the **Club** is entitled to appoint a delegate to attend the meetings of the Executive Council and to take part in its proceedings. Societies or Institutes with more than one hundred members are entitled to appoint an additional delegate for every additional hundred members.

(b) Any Beekeeping Society or Institute in the United Kingdom or abroad which has no official membership in the **Club** is entitled to send one representative to the Annual Meeting of members for the purpose of obtaining any desired information on the work of the **Club**, but without the right of taking part in the proceedings of the meeting unless invited by the Chairman, and without the right to vote.

(c) Any Beekeeping Society or Institute abroad having official membership in the **Club** has a right to appoint one representative in the United Kingdom to attend the Executive Council's meetings and to vote by proxy on behalf of the said Society or Institute.

(d) Any member of the **Club** in the United Kingdom or abroad is entitled to delegate his or her vote to a fellow member but must inform the Organising Secretary of this decision in writing prior to the Conference of members.

(e) Any member of the **Club** is entitled to attend all meetings of the Executive Council but without taking part in its deliberations unless invited by the Chairman to do so, and without the right to vote.

(f) Any business beekeeping establishment in the United Kingdom or abroad is entitled to send one representative to the Executive Council's meetings and to the Annual Meeting of members subject to similar reservations as laid for Societies and Institutes under clauses (b) and (c) of this article.

(6) ELECTION OF OFFICE-BEARERS.

No honorary office-bearer other than a delegate is entitled for re-election more than once, except by a three-fourths majority of members at the Annual Meeting.

(7) SUBSCRIPTIONS AND DONATIONS.

(a) The minimum individual membership fee to the **Club** shall be 10s. 6d. per annum payable in advance, the membership commencing at any time. For Societies and Business Establishments the minimum annual fee shall be one guinea for every delegate appointed.

(b) Subscribers of £10 and upwards paid in one sum are eligible for election as life members.

(c) No resigning member shall be entitled to the return of his fee or donation to the **Club.**

(8) RESTRICTIONS.

(a) Any member deferring the payment of his or her fee for more than two months after it becomes due may be considered as having resigned from the **Club.**

(b) The Executive Council shall have full power to refuse the membership of any applicant and to erase the name of any member who deliberately acts against the rules of the **Club** or whose conduct is likely to be injurious to the interest of the **Club,** in both cases returning the membership fee or the balance of it.

(c) Before deciding on erasing the name of any member, the Executive Council shall secure, if possible, a written explanation from the accused member.

(d) Any applicant for membership or any member expelled from the **Club** shall be entitled to appeal to the Annual Conference of members, whose decision shall be final.

(9) GENERAL CONFERENCES.

(a) The Annual General Conference shall be limited (subject to the concession in article 5) to members of the **Club** whether as individuals, Societies and Institutes, or Business Establishments in the United Kingdom and to representatives of corresponding members abroad, and shall be held as early as possible in May.

(b) A Special General Conference constituted as above may be held on the decision of the Executive Council after a notice of not less than one month has been given to all the members of the **Club.**

(c) For formulating, altering, or withdrawing Rules of the **Club,** and for deciding on the disposal of its funds and its future, a majority of three-fourths of those present and voting individually or as proxies, at an Annual or a Special General Meeting shall be deemed necessary.

(d) Voting at all General Conferences of members shall be always by ballot.

Our Book Shelf.

Books still accomplish miracles; they persuade men.—CARLYLE.

DETERMINATION OF AGE IN HONEY BEES. *

By HELEN L. M. PIXELL-GOODRICH, D.Sc.

We are accustomed to think that we know an old bee when we see one. This may be so for "practical" purposes; but for research work it is necessary to have some more accurate test of a bee's age than is provided by her outward appearance. Dr. H. L. M. Pixell-Goodrich is therefore to be congratulated on her paper. The method developed therein depends on the fact that, in bees, as in many other animals, old age is accompanied by changes in the appearance of certain cells of the brain. Unfortunately, it has not proved possible to see these changes satisfactorily in fresh brains; so that a lengthy process of fixing, embedding, sectioning and staining has to be gone through to get good results. This places the method out of the reach of most of us; as special apparatus and considerable skill—one might indeed say, special aptitude—are required for such work. This does not, however, detract from the great importance of the paper as a contribution to our knowledge of bee anatomy and physiology.

Besides the main subject of the paper, Dr. Goodrich touches on several other matters of interest.

Diseases of the I.W.D. type. Of these there appear to be several; microsporidiosis or **Nosema** disease, dysentery due to yeasts, infection with mould (in bees under observation in the laboratory), the condition ascribed by Cheshire to **Bacillus gaytoni,** and "malignant disease" (as Dr. Goodrich provisionally calls it). This last is the "I.W.D." of Rennie and others, and its cause is at present unknown.

Dr. Goodrich has discovered a hitherto unknown pair of glands close to the œsophagus and just behind the brain. It appears from the paper that she is engaged on a study of the various glands and their changes with age and occupation (nursing, etc.); a work that promises to lead to most interesting and important results.—Annie D. Betts.

BEEKEEPING IN GERMANY. Pastor Gerstung, in the opening paragraphs of his book **"Der Bien und seine Zucht"** (1919 edition) gives an interesting account of the present state of things apicultural in Germany. The war has caused a revival of beekeeping to an even greater extent than in this country; for not only did the price of honey and wax rise high (honey was officially fixed at 7 mk. per kilogram—say, about 3/2 per lb., as much as 9/- per lb. was however obtained in clandestine trading), the bee flora has been much improved by the cultivation of mustard, flax, and other oil-producing plants on a large scale to supply the deficiency of fats. The allotments round the towns have also made beekeeping profitable for city dwellers. Gerstung considers that this revival of apiculture will continue and even extend during the next few years.

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* **Quarterly Journal of Microscopical Science,** Vol. 64, Part 2, Jan. 1920.

German beekeepers have to contend against a large artificial honey trade; the manufactured now much exceeds the natural supply.

In spite of the increase in the bee population there is still much room for expansion; Germany's imports of honey and wax just before the war exceeded her exports very considerably (a fact that comes rather as a surprise). Live bees were also largely imported, principally from Holland.—A. D. B.

Will conscientious German beekeepers now help to alleviate the sufferings of their Belgian and French neighbours? They are nearer to them than American beekeepers.—Ed.

TARIFF ON HONEY.

The **Am. B.J.** plays the distinguished part of the unbiassed judge in a matter of self interest where bias is supposed to be excused as "natural" even by educated people who can serve their interests better by refined means of competition rather than by unjustly suppressing their competitors. The criticism of our contemporary is not directed to anyone on this side but to a writer in another American periodical, **The California Honey Bowl,** who "firmly believes that the U.S.A. should have a tariff of from 3 to 5 cents. a pound on honey. American honey is at present confronted with foreign competition and in most cases this competing honey is of an inferior grade, produced in foreign countries where labour is cheap, and such competition is quite unfair to the beekeeping interests of America, where the best honey of the world is produced......" To this cry, the oldest Bee Journal in the English language retorts: "Almost exactly the same arguments may be read in foreign bee magazines against American honey, which they also say is of low grade and cannot be compared with their own product. Tariff is two-edged sword. You may become convinced of the necessity of a tariff when you take only the selfish view. But when you read it in the other country's magazine, you realise how unfair such arguments are."

LOOKING FORWARD.

Amongst the generous messages of encouragement to THE BEE WORLD is one from Mr. Ernest Root, the celebrated editor of **Gleanings,** who recently recovered from a serious illness. Our learned colleague is good enough to remark: "I wish to congratulate you again on the excellence of your magazine. It is alive and full of 'pep,' as we say in this country. I am sure that such a publication will have a strong support. I have been trying to find time when I could sit down and have a chat with you and your readers over its contents." Mr. Root will forgive us for expecting a big treat from him after this appetising notice.

WAR LOSSES OF FRENCH BEE-KEEPERS.

The **Am. B.J.** for January publishes the following message from Mr. Crepieux-Jamin, of Rouen, the former associate editor of the **Revue Internationale d'Apiculture**: "I am greatly moved by your appeal to the American Beekeepers in your October number. Never has help been more greatly needed than it is at present in our northern districts. The disaster defies description; one must see to believe. For hundreds and hundreds of kilometres everything is destroyed to such an extent that in some cases it is impossible to find the exact location of a former village without a survey. It is frightful. Wherever things had been left standing after the bombardment, the Germans burned them or blew them up, cutting down the fruit trees and the shrubbery. It is a desert. The people come there with some money, but they go away discouraged. Some, however, begin to rebuild among the ruins. Some beekeepers, whom I know, would be glad to begin over with a colony or two. The busy hum of the bees would undoubtedly encourage them. What they hope for, is to be helped with a fresh start, the first few colonies. A school teacher whose apiary was destroyed was trying to rebuild it. I sent him 20 francs. He returned the money, saying that all he wished for was a few hives of bees. But where could he secure them? However, the only way to rescue them is with financial help, and secure bees from away, for a start. Your generous initiative is greatly appreciated here."

We ask, what are British beekeepers going to do? Those who prefer to please the public rather than educate them will readily make excuses. Excuses do not help. Sympathetic unselfish apiarists in the United Kingdom should send whatever donations they can give, and however small these may be, to **The American Bee Journal,** Hamilton, Illinois, U.S.A. Britishers should be proud of the fact that Mr. Graham Burtt, of Gloucester, through **The Society of Friends**, has played a very active and much appreciated part in managing the French re-stocking scheme. He has now returned to England after leaving the work in the hands of the **Societe d'Apiculture.** It is fitting to supplement his public work by a decent contribution of hives and appliances (in the name of British beekeepers) by the Trade in this country. And if every B.K. Association in the United Kingdom would contribute no more than ten shillings to the Franco-Belgian Relief Fund, we do not believe they would be enduring much inconvenience, yet they would be rendering a noble fraternal service which is its own reward.

VALUABLE BULLETINS.

We have been presented by the **North of Scotland College of Agriculture** at Aberdeen with Bulletins No. 25, 26 and 27 dealing respectively with "Some Hints For Prospective Beekeepers," "The Natural History of the Bee" and "How to Handle Bees," also with a very instructive brochure on "The Nicolson Observatory Bee Hive and How to use it." This single frame observatory hive is admired by many and is generally considered the best of its kind on the British market. Mr. John Anderson, M.A., B.Sc., Lecturer in Beekeeping at the College and President of the **Scottish B.K.A.** has been very good to us and has shown his practical sympathy in more than one form. In a recent message of encouragement to this magazine he generously remarks: "I like THE BEE WORLD very much, and there are a number of us who would like to see in Britain a Journal that is not at the mercy of a clique...... I am in hopes that some of us will one day be boasting that we have subscribed to THE BEE WORLD from the first number." This lofty principle emphasised by Mr. Anderson deserves the highest recognition. We have endured unbelievable hardships and faced great odds rather than witness the defeat of an ideal for the development of which we have been so far robbed of almost every chance.

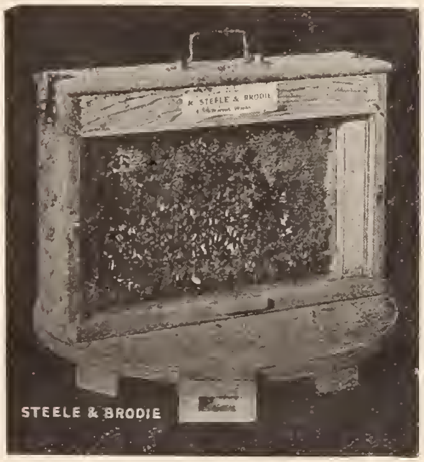


Fig. 54.

The Nicolson Observatory Hive.

A NOVEL WAY OF HONEY TAKING.

Mr. Raymond B. Whittaker, of Salop, writes to us: In "**A Residence Among The Chinese,**" written by the late Robert Fortune as a record of his adventures during a third visit to the Chinese, he gives the following very unique and interesting method of taking honey from bee hives.

"During my sojourn in this place I had an opportunity of witnessing a novel mode of taking honey from bee hives. The Chinese hive is a very rude affair, and a very different looking thing from that we are accustomed to use in England, and yet I suspect, were the bees consulted in the matter, they would prefer the Chinese one to ours. It consists of a rough box, sometimes square and sometimes cylindrical, with a moveable top and bottom. When the bees are put into a hive of this description, it is rarely placed on or near the ground, as with us, but is raised eight or ten feet, and generally fixed under the projecting roof of a house or out-building. No doubt the Chinese have remarked the partiality which the insects have for places of this kind when they choose quarters for themselves, and have taken a lesson from this circumstance. My landlord, who had a number of hives, having determined one day to take some honey from two of them, a half-witted priest who was famous for his prowess in such matters was sent for to perform the operation This man, in addition to his priestly duties, had the charge of the buffaloes which were kept on the farm attached to the temple. He came round in high glee, evidently considering his qualifications of no ordinary kind for the operation he was about to perform. Curious to witness his method of proceeding with the business, I left some work with which I was busy, and followed him and the other priests and servants of the establishment to the place where the hives were fixed. The form of the hives, in this instance, was cylindrical; each was about three feet in height and rather wider at the bottom than at the top. When we reached the spot where the hives were placed, our operator jumped upon a table placed there for the purpose, and gently lifted down one of the hives and placed it on its side on the table. He then took the moveable top off, and the honeycomb, with which the hive was quite full, was exposed to our view. In the meantime an old priest having brought a large basin, and everything being ready, our friend commenced to cut out the honeycomb with a knife made apparently for the purpose, and having the handle almost at right angles with the blade. Having taken out about one-third of the contents of the hive, the top was put on again, and the hive elevated to its former position. The same operation was repeated with the second hive, and in a manner quite as satisfactory.

But it may be asked "Where were the bees all this time?"—and this is the most curious part of my story. They had not been killed by the fumes of brimstone, for it is contrary to the doctrines of the Buddhist creed to take away animal life—nor had they been stupefied with a fungus, which is sometimes done at home; but they were flying about above our heads in great numbers, and yet, although we were not in the slightest degree protected, not one of us was stung; and this was the more remarkable as the bodies of the operator and servants were completely naked from the middle upwards.

The charm was a simple one; it lay in a few dry stems and leaves of a species of Artemisia which grows wild on these hills, and which is largely used to drive that pest, the mosquito, out of the dwellings of the people. This plant is cut early in summer, sundried, then twisted into bands, and it is ready for use. At the commencement of the operation which I am describing, one end of the substance was ignited and kept burning slowly as the work went on. The poor bees did not seem to know what to make of it. They were perfectly good-tempered and kept hovering about our heads, but apparently quite incapable of doing us the slightest injury. When the hives were properly fixed in their places the charm was put out, and my host and his servants carried off the honey in triumpth."

The author of the above description is credited with having introduced several plants into this country, but, as far as I can ascertain, this "species of Artemesia," is absent from our land. It is a pity, for it would save a good deal of annoyance as well as time, and, instead of forcing bees to gorge themselves with honey as we have to do now, this gentle treatment would be better for bees and beekeeper.

THE B.B.K.A. SPRING CONVERSAZIONE.

On the occasion of the Annual Meeting of members of the **British Beekeepers' Association,** which will be held on Thursday, April 1st, at the Central Hall, Westminster, Major C. C. Lord will give a lecture on "Bee Diseases," which will be followed by a discussion. Mr. William Herrod-Hempsall will also lecture on "Queen Rearing and Introduction, and Increase." Both subjects should merit much interest. The Secretary of the Association will be pleased to receive objects of interest for exhibition, and it is hoped that members will bring as many friends as possible to the conversazione. Use will be made of the occasion for presenting Mr. G. Bryden with the W.B.C. Gold Memorial Medal.

THE "MONEYCOMB."

This is the Trade name of the MacDonald comb, of which we have already given repeated appreciation and criticism. Preparations for its production in this country are in the hands of Mr. E. H. Taylor, of Welwyn, Herts, and it is hoped that it will be marketed here by next May in British standard sizes. Mr. Taylor's 1920 catalogue is as usual most informative on many types of hives and appliances and is further well supplemented by his very interesting brochure on the "Moneycomb," which may be obtained from him, free of charge, on application. The accompanying instructive illustration is amongst those given in the above-mentioned treatise.

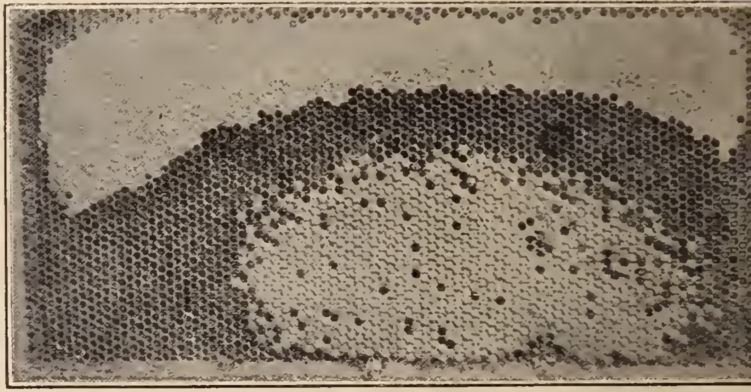


Fig. 55.

Young Bees in all Stages of Hatching in "Moneycomb."

LOOK OUT FOR OUR GRAND "SPRING NUMBER."

Although intended to be issued in 16 pages of large type, the wide scope of THE BEE WORLD has forced us to ignore this rule to our greater expense. Consequently, the volume of literature which has already appeared is **more than three times** the normal estimate. Neither the Special Peace Number (June), the Special Autumn Number (September) nor the Christmas Number has been counted other than a single issue, although each represents at least three numbers. This has been much appreciated by every member of **The Apis Club** who has taken live interest in perusing the magazine. We are maintaining for the first volume its regular good features, and have further to sacrifice our advertising space in order to secure in one issue the full proceedings of the London Conference on Legislation. This will take several pages, and in fact will account for a full number. Rather than do this, we shall publish a Special Spring Number which we trust will prove to be worth more in literary value than three issues, as it will cost us more to produce. We trust also it will merit a special appreciation from our readers. And we hope it is a good omen for the future of THE BEE WORLD that its first volume will be concluded with the same Faith and Courage that shaped its birth.

THE IMPROVEMENT OF THE HONEY EXTRACTOR.

The Judge in our literary competition relative to the improvement of the Honey Extractor has not yet decided on the award of the prize, as he awaits the construction of a model in illustration of the principle suggested.

THE METAL FOUNDATION. World-wide interest has been created in this invention, especially as the first demonstration given at the **B.B.K.A.** offices last November was attended by some international apiarists who happened to be in England, and therefore acted as eye witnesses and first hand critics on returning to their countries. In America, there seems to be a misunderstanding as to the nature of this invention and the observations and experiments which led to its evolution, to judge from the January editorial of **Gleanings**. In serving our educative aim, we would only have been too glad to emphasise the evidence of any former worker, of similar opinion, as this would have immensely helped us to overcome much prejudice. Unfortunately we cannot yet find him ! As to the milling of Metal Foundation, we have already illustrated a simple mill which serves the purpose. A more powerful mill on different lines but bearing the same principle, and worked by machinery, for the purpose of stamping sheets of metal (preferably 28 w.g. aluminium, non-poisonous aluminium alloy, or zinc) can of course be produced. The metal sheets may be milled when cold or hot, the latter for the purpose of producing markedly sharp ridges, but this is a matter of opinion.

The Arena: Letters to The Editor.

Criticism is a disinterested endeavour to learn and propagate the best that is known and thought in the world.—Matthew Arnold.

BEEKEEPING IN NEW ZEALAND.

To the Editor of The Bee World.

DEAR SIR,—For your information I may report that the present season here promises to be a record one for New Zealand.

Beekeeping is going ahead in leaps and bounds in this Country, and the production of honey is being almost doubled annually. The co-operative organisation known as **The N.Z. Honey Producers' Association Ltd.**, of which nearly all commercial beekeepers in New Zealand are shareholders, is largely responsible for the present satisfactory state of the market. This Association, together with the Apiaries " Act " in operation, and our splendid marketing facilities, enable us to live and thrive in an environment not found in other spheres of beekeeping.

Yours faithfully,
J. H. BENTON.

Featherston,
New Zealand.

THE AMERICAN BEE AND " MALIGNANT DISEASE."

To the Editor of The Bee World.

DEAR SIR,—Having examined and studied some of the dysenteric troubles amongst bees in England during the summer of 1914, I have no hesitancy in recommending to English beekeepers that they try the leather-coloured stock which has been bred in some of our Northern States. Last season in our apiaries we tested out some 50 " golden " queens purchased from a well-known California breeder and the average colony production headed by these " goldens " amounted to only 49 pounds. On the other hand, the average production per colony for 600 leather-coloured colonies was 154 pounds.

Yours faithfully,
M. C. RICHTER.

Richter Apiaries Co.,
Modesto, California,
U.S.A.

THE STANDARD FRAME.

To the Editor of The Bee World.

DEAR SIR,—In the Special Autumn Number of THE BEE WORLD, which will certainly appeal to beekeepers internationally, and on the splendid general get up of which the writer desires to compliment you, Mr. J. Herrod-Hempsall has an article on the Standard Frame which in particular caught our eye. A little correction here would not be amiss.

He says that the same diversity of opinion exists in other Countries as in Britain, and then gives a table of sizes of frames in general use, mentioning the Adair, American, Gallup, Heddon, Danzenbaker, and two Indian. Now we might say that you could go for miles through this Country and not find any of these frames in use. As a matter of fact, we have not carried these styles in stock for many years and very rarely have a call to make up any to special order. And as far as Australia, New Zealand, South Africa, Canada, the Orient, and the United States are concerned, the Langstroth may be accepted as the Standard Frame ; we ship no other style to these points.

Yours faithfully,
CHAS. G. TOLLAFIELD.

The A. I. Root Co.,
Medina, Ohio, U.S.A.

PROGRESSION OR RETROGRESSION ?

To the Editor of The Bee World.

DEAR SIR,—In comparing the various articles appearing in bee periodicals in Britain with those of America, one is struck by the trend of a certain school of beekeepers in England to copy the American style, their claim being that it is cheaper and more efficient.

At first sight this may appear so, but is it really so in the end ? I may refer to this again later on, but first let us have a look at what American beekeepers are doing.

Back in 1916 in the **B.B.J.** for Oct. 26th, Mr. J. N. Kidd advocated certain features of the American style hives, such as single walls, no cleats (or plinths), no porches, and short lugs to frames, but he was satisfied with the small British Standard frame, complaining that the Langstroth is too big ; yet in the Temperate Zone in the States and in Canada, those single-walled hives have penalised the big apiarists for many years, in that they were either compelled to winter their colonies indoors (generally in a cellar), in many cases keeping a furnace going for their benefit, to the expense of which had to be added that of carting in and carting out again ; or else to use big out-door packing cases, entailing heavy expense in first cost, and labour in fitting up twice a year, to prove in the end but a dubious investment.

For several years many prominent beekeepers in the States have inclined to a larger frame than the Langstroth, larger in depth be it noted, such a frame having been advocated by the Dadants for a great number of years ; and now they are finding that hives made double-walled and packed with insulating material are better for their bees and more economical in the long run, the saving of bees and especially stores during winter making such a big difference that the extra first cost is quickly repaid.

Perhaps I had better remind readers of THE BEE WORLD that because a colony has survived the winter, that is not to say that it " wintered successfully," for it may have so drawn on its reserves, both of stores, bees and vitality, that it either fails to build up at all, going under with disease, or being robbed out, or else builds up so slowly that it fails to give any returns, consequently becoming a dead loss that season. The colonies that cover ten standard combs by the end of March having brood in four or five, yet have enough stores to carry on for another month, are such as I should define as having wintered successfully, but how many does one find in that condition ? And why ? I think it is because the British Standard comb is too small, not giving enough clustering room below a sufficiency of stores, so that if progress is made up to the " five combs of brood " point, should bad weather set in, starvation stares them in the face ; and unless the apiarist is a " live man " his bees will soon join him, and all be " deaders " together.

Having digressed so far, I had better return to the subject we started to discuss. There has appeared on the English market a hive modelled on the common American pattern, as distinct from the more up-to-date type mentioned above, with single walls of thick material, and flat legless floor-board, which is recommended on the score of cheapness and efficiency, yet the people who have been using this type of hive for the past three or four decades, are now reverting to a type which might be very well called a modification of the Cowan or W.B.C. styles, in that it is doubled walled, with loose outer case, leaving room for packing material for the winter. There has been an advertisement running in the **American Bee Journal** for a long time of such a hive as this, and the A. I. Root Co. have made a similar hive for many years. They are finding that the American apiarist is not worrying so much about "first cost" as he was formerly supposed to do, but wants a fairly sure investment for his money, and proof goes a long way to shew that the more expensive, yet simple, double-walled hive is surely winning favour.

Why, then, should we revert to a style that is already condemned and out-of-date? Is that progress?

With reference to the larger frame movement, I am fully in accord with the idea, and even lean toward a larger one than the Commercial (16″ × 10″), and am trying some Dadants' ($18\frac{1}{2}''$ × $11\frac{1}{4}''$), and hope to be able to report my experiences at some future date, but when I read in the Christmas number of THE BEE WORLD that Mr. Manley advocates the American $1\frac{3}{8}''$ spacing, I really had to rub my eyes, and read it again.

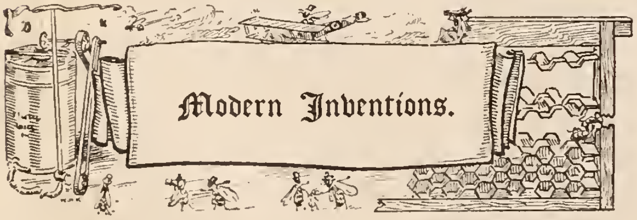
I have already referred to the change of thought in American beekeeping circles, and this is one of the very things which they are beginning to scrap, although the Dadants, pioneers of the large frame, have preached it for generations, and they are now making more hives, having the frames spaced at $1\frac{1}{2}''$ than ever before. Our English W.B.C. metal ends are supposed to give $1\frac{9}{20}''$ which is near enough to $1\frac{1}{2}''$ for practical purposes.

Now, when the larger combs were first advocated, I understood that one of the arguments brought forward was that they would help to prevent swarming, a reasonable supposition, but as swarming is dependent on several conditions, we cannot rely upon that alone. So, if we give plenty of breeding room but no ventilation, we are defeating our own ends, and this is exactly what the narrow spacing will do; it will be taking away with one hand what you give with the other, so no advantage will accrue. On the other hand, the advantage of that extra amount of honey stored above the brood cluster, and **on a fewer number of combs** is of much greater importance than Mr. Manley appears to think. If closer spacing is desired, it can be accomplished with the W.B.C. metal ends, but the American spacing is a fixture. I have seen some of those spacers which he advocates, giving $1\frac{3}{8}''$ on a $\frac{7}{8}''$ frame, and I should imagine the amount of propolis that will be chunked in will soon make them space at $1\frac{1}{2}''$. The complaint lodged about the bad spacing of frames at the bottoms when fitted with metal ends, is quite legitimate, but I have found the trouble to be purely a mechanical one; it is only a matter of the frame, which must be cut a tight fit at the shoudlers, and then nailed up dead square. I have often wondered how many people take the same trouble over their frames that I do, for I will not pass a frame that does not stand up square in every direction. This will apply equally to the large frames as to standards or shallows.

I hope this letter will give some beekeeper reason to pause and think before changing over to a new style, and ask himself: "Is that progress?" and if he decides that it is, I shall be fully repaid for this time given, for the good of the Cause.

Yours faithfully,
F. M. CLARIDGE.

Copford,
Near Colchester.



Modern Inventions.

Root's Steam-Heated Uncapping Knife.

It was rightly predicted some years ago that this valuable invention was bound to achieve an international popularity.

For a large amount of uncapping and especially when dealing with tough combs of thick honey, the nuisance of the frequent changing of the ordinary uncapping knife is well known. The ordinary method of heating will not admirably answer the purpose.

The Steam-Heated Uncapping Knife is almost an ideal appliance that solves the problem of rapid and efficient uncapping in a minimum of time. It is therefore a boon to the large honey producer and should meet with a good demand in all countries amongst progressive apiarists.

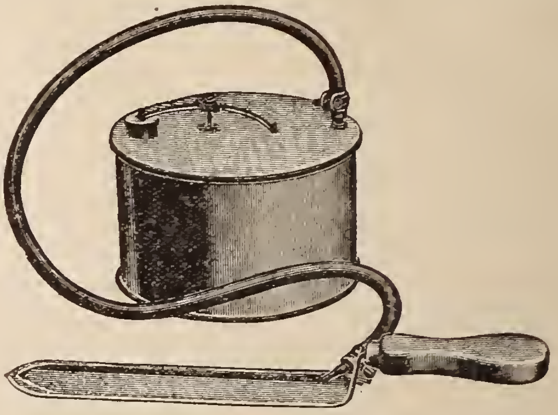


Fig. 56.

"The handle of this knife is made in one piece and fastened securely to the blade by an improved method. Its great feature is that it will slice off cappings much more rapidly than a cold knife, or one that has to be dipped in hot water. As the knife is kept constantly hot, the cappings slide off from it without sticking, while with the cold knife the cappings have to be scraped off on the side of the can or table. The copper boiler used with this knife is equipped with a fool-proof safety-valve, which has been tested under every condition. It is adjustable, and the opening is also used as a filler hole. This boiler, in connection with a small one-burner oil stove, completes the outfit."

As to the details of its construction and working †, a piece of non-rusting metal is soldered on the top of the knife-blade, and steam is introduced through a tube near the shank of the knife, circulates over the blade, and blows out through a small opening at the point. A piece of rubber tubing containing some fabric in its make-up conveys the steam from the boiler to the knife. Tubing, known as "air pressure tubing," carries the steam satisfactorily and yet it is flexible enough not to interfere much with the action of the knife.

This interference, however, sometimes exceeds a tolerable minimum and the appreciable and constant jerking of the tube under such circumstances soon strains the wrist of the operator.

The greater success of the Steam Uncapping Knife in future seems to depend on improving the tubing. Balancing advantages with defects, we consider that an **Electrically Heated Uncapping Knife** should call for evolution and should rival the Steam Uncapping Knife in utility.

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† THE A.B.C. and X.Y.Z. of BEE CULTURE.

Autumn Leaves from bygone seasons

HISTORY OF THE IRISH BEEKEEPERS' ASSOCIATION.—II.

By M. H. READ, M.A.

Walter J. Stanford was at this time an undergraduate of T.C.D., and his tutor was Dr. Anthony Traill. When the S.P.C.A. could no longer offer hospitality to the Committee and other meetings of

I.B.A., Dr. Traill came to the rescue by giving the use of his rooms at 35 T.C.D. And here for years the history of I.B.A. was evolved up to the time when Dr. Traill became Provost. His sympathy with the Association was shown in every possible way. Much of his time was given to its meetings; and whenever matters were to be pressed on those in authority, his aid and influence could always be counted on.

The year 1886 may be noted as a turning point in the career of the Association. A great change in the personnel of the Committee took place. Among the newly appointed was the writer. The policy of retrenchment turned the attention more from propaganda to looking after the interests of members. At the Annual Meeting Mr. Chenevix suggested such a policy; and it appears to have ruled his outlook through the period of his own Hon. Secretaryship, which began in 1887, when Mr. Walter Stanford entered on his professional life.

The year 1886 may also be noted as that in which beekeeping statistics were first collected among the Agricultural Returns for Ireland, as the result of an application from the I.B.A. to Mr. Grimshaw, the Registrar General. And a copy of the statistics is printed in the Annual Report for that year.

In 1887, a guarantee fund was made to enable the Association to hold a Show at Salthill Gardens again This was the most ambitious one hitherto attempted and cost £65, two military bands being engaged for the two days. Mr. Roland Green, Expert of the B.B.K.A., was lecturer. And a Conversazione was held in Dr. Traill's rooms on the first evening.

This was a bumper honey season. The writer had seven stocks and five of them gave an average of 126 lbs. each.

The Annual Report for this year first contains the name of the Rev. J. G. Digges, destined afterwards to figure so largely in the beekeepers' eye.

Perhaps largely owing to the Show and the prominence given to it in the Press, the membership of the Association had a great rebound, reaching 140 as contrasted with 85 in 1886 and 67 in 1885.

The egg from which Local Associations hatched may be said to have been laid this year. For at the Annual Meeting, Dr. Knight pleaded strongly for their formation, but the matter was deferred till the Association should have become strong enough to throw off swarms.

The specification of a standard hive to take frames of 16″ top bar was drawn up by a sub-committee, consisting of Messrs. Gillies, Sproule, Millner and Dr. Allen, and was adopted by the Committee. However, the 17″ top bar was never displaced in the public favour.

The first move in 1888 was to appoint 12 gentlemen to act as district Hon. Secretaries for their respective counties. Among these the Rev. J. G. Digges was appointed for Leitrim and Mr. W. Morony for Mayo.

Mr. Morony having arranged for demonstrations in the Bee Tent at Hollymount Show on 7th August, gave the writer his first opportunity of this work. The expenditure exceeded receipts by £2 6s. 3d.

An exhibit of Irish Honey, 240 sections and a similar quantity of bottles of run honey, was made at the Irish Exhibition, London, Messrs. Abbott Bros. undertaking the care of the exhibits. Irish made hives were also shown.

In February 1889, the Hon. Secretary, Mr. Chenevix, and the Hon Treasurer, Mr. J. Edmondson, were appointed an Examining Board for examining candidate experts with power to add to their numbers. They added Messrs. Sproule and Gillies; and the Committee in September appointed the writer on the Board, and made Mr. Hargraft, of Shinrone, Father Kavanagh, of Ashford and Mr. W. Morony, of Ballyglass, Hon. Experts to the Association.

Two cylinder extractors were purchased for the use of members and placed in charge of Mr. J. Edmondson and Mr. Jas. Abbott, who had set up a factory for beekeeping appliances at Merchant's Quay; and arrangements were made with them for hiring to members spring crates for sections and tins for run honey, to forward their honey to the Association's depôt for sale by Mr. Abbott.

On the suggestion of Mr. Gillies at a Conversazione on the 28th August, scales of marks for judging honey, section, liquid and granulated were adopted.

The Report for 1890 contains for the first time the name of one who is never likely to be forgotten by Irish beekeepers. Turlough B. O'Bryen, who on the 10th April was appointed District Hon. Secretary for the Counties Clare and Galway.

A considerable change was made again this year in the membership of the Committee, several of the District Hon. Secretaries being elected, among them the Rev. J. G. Digges, Hon. Secretary for Leitrim, and Mr. W. Morony, Hon. Secretary for Mayo.

During Horse Show week, lectures in the Bee Tent were given at Obelisk Park, Blackrock, the residence of Mr. Goodbody. Mr. C. N. White, of Somersham, Hunts., lectured and afterwards made a three days' tour, visiting apiaries in Co. Louth, being entertained by Miss E. E. Rutherfoord, of Carlingford, who had been a member of I.B.A. from the first, was elected a Vice-President in this year, and at the present date is the only member remaining in the Association since the first year.

During this visit Mr. White conducted the first examination held for the Expert's certificate of I.B.A.; and on his report the first certificate was issued to Owen Fearon, gardener to Miss Rutherfoord.

Mr. Robert Sproule made public this year the favourable results he had obtained in treating foul brood with formic acid. Wide interest was excited in England, also in his experiments; and a Sub-committee of I.B.A. was appointed to assist in investigating the treatment.

In 1891, efforts were made to establish depôts for the sale of members' honey in Cork and Limerick, the oversight being undertaken by the respective District Hon. Secretaries, the Cork depôt attaining to a fair degree of success.

Communications were opened with the B.B.K.A. with a view to joint action in having beekeeping made a subject of instruction in National Schools. The I.B.A. followed up the matter and the difficulty about a suitable text book was met by the Hon. Secretary, and the writer preparing a reader which was presented to the Educational Board.

ROOT'S WOOD-AND-WIRE QUEEN EXCLUDER.

We have already given (in the November number of THE BEE WORLD) an appreciative review of the "**Whyte Queen Excluder.**"

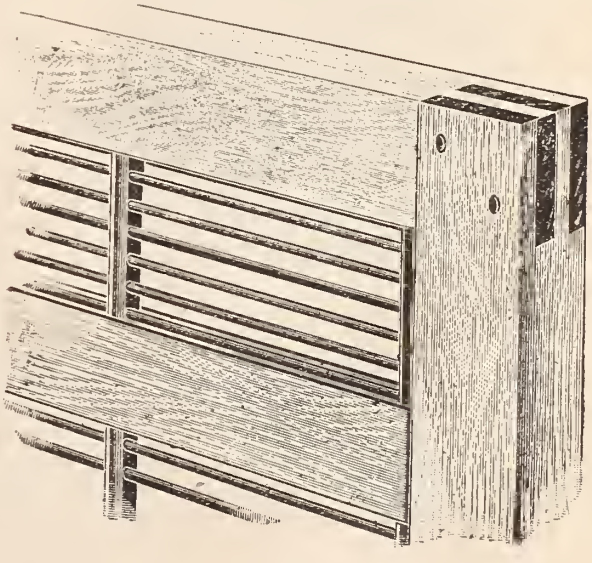


Fig. 57.

A Corner of Root's Wood-and-Wire Queen Excluder.

which is undisputably considered the most advanced British appliance of its kind. If the thickness of the wires used were only to be doubled or trebled and the resistance thereby increased, it would certainly leave nothing to be desired. The question of framing it or of creating a composite wood-and-wire structure is a matter of opinion. Personally, we prefer the latter type, becuase it is more resistant and yet gives ample space for the workers within the hive for moving freely between the brood chamber and the super. Those who dispute this need only consider the relative size of the hive entrance, even at the height of the season.

The A. I. Root Co., of Medina, Ohio, U.S.A., who produce more than one type of queen excluders, have, in our opinion, introduced a very valuable appliance in the shape of their wood-and-wire queen excluder which is well known in "The States" and in many other countries, but, surprisingly enough, is little known in this country. The accompanying illustration (Fig. 57) readily shows the solid structure of such a galvanised wire and wooden excluder. The wires are smooth, well soldered to their supports, and the whole structure of wires and boards is firmly gripped by a wooden rim which fits flush between the brood chamber and super.

THE UXBRIDGE NUCLEUS HIVE AND TRAVELLING BOX.

When "Adminson's Breeder Hive" was introduced early in 1919, it included an internal cover with a handle suitable for employment in case the brood chamber is temporarily transformed into a travelling box. Experience has shown the rare likelihood of any beekeeper caring to use his painted hive as a travelling box, except in an unusual emergency. Hence the manufacture of such an internal cover was dropped.

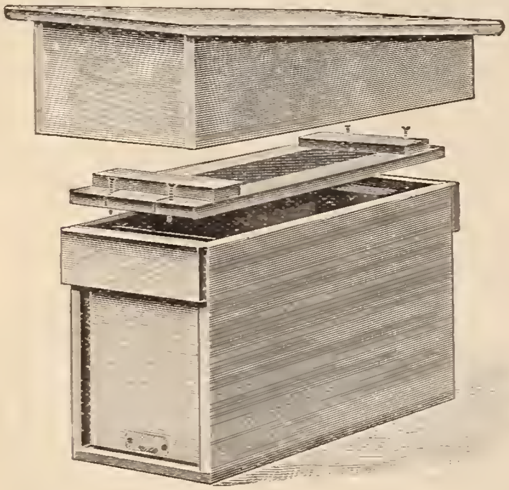
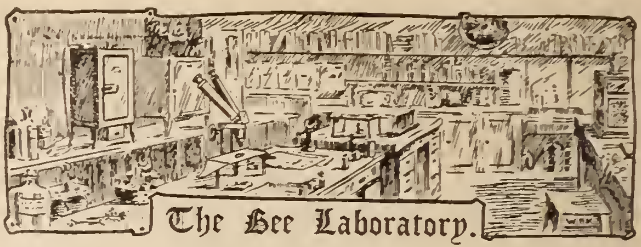


Fig. 58.

On the other hand, this combination has proved most advantageous for a temporary Nucleus Hive and Travelling box, such as illustrated and now marketed under the above title by Messrs. James Lee and Son, of George Street, Uxbridge. It is of special value in re-stocking work and is admirably adapted for housing a 4-frame nucleus or sending it by rail. The elimination of the handle of the internal cover, however, does not seem to us to be an advantage.


The Bee Laboratory.

CULTURE MEDIA FOR FUNGI AND BACTERIA.

By ANNIE D. BETTS, B.Sc.

Some readers of THE BEE WORLD may be sufficiently interested in the subjects of the last two articles in this column, or in the study of bee diseases, to wish to investigate the organisms concerned for themselves. It may therefore be useful to give some account of how to prepare the various culture media which have been found satisfactory for the cultivation of hive-fungi and other micro-organisms of interest to the beekeeper. As the glassware and other apparatus, and the methods of using it, are described in any elementary text book of bacteriology, I do not propose to discuss these matters here, but to proceed at once to the description of the culture media.

Fungi in general differ from bacteria in preferring acid substrata to alkaline ones; hence it is not necessary to neutralise media intended for fungus cultivation. For bacteria, on the other hand, neutral or slightly alkaline media are best; and, if acid to begin with, the medium must have added to it sufficient caustic soda solution to make it neutral—that is, until blue litmus paper dipped in it no longer turns red, while red litmus paper shows a slight tendency to turn blueish.

Honey Solution. This is the most generally useful medium for bee hive fungi other than the few pathogenic species. The best strength for general purposes is about 20%; that is, one volume honey to four volumes water. Warming the honey makes it easier to measure out. In order to obtain a solid substratum, either agar-agar or gelatine is added to the solution. Agar, which is prepared from a species of seaweed, is most conveniently used in the powdered form; to every 100 ccm. of solution add from 1.2 to 2.0 grammes of agar powder. In order to avoid lumps, which are difficult to dissolve, do not previously heat the honey-solution (never mind if in consequence the honey and water are not thoroughly blended, as it is of no consequence at this stage), but drop the powder slowly out of a paper scoop on to the surface of the cold honey solution. The agar will gradually settle, and can then be dissolved by setting the vessel in boiling water, and bringing to the boil. Agar is difficult to filter through filter paper without special apparatus and very thorough heating; for our present purpose it will be sufficient to strain the medium through two or three thicknesses of muslin (washed clean of the "dressing" that is in it when bought). The medium can now be filled into test tubes, sufficient being placed in each to give a good long slant surface when the tube is laid nearly horizontal. The tubes must now be sterilised; this may be done by standing them in water in a saucepan, bringing to the boil, and keeping at boiling point for at least 20 minutes, on three successive days. The tubes are to be kept in a warm place during this time. This ensures the destruction of any micro-organisms present in the medium.

If gelatine be used, it is added in the proportions of 10 grammes gelatine to 100 ccm. of solution. It is a better medium for some of the fungi; but is not so useful for general purposes, as many of the species are able to liquefy it (when the tube must of course be carefully kept upright), and it is moreover at present decidedly expensive.

Nutrient Bouillon. This is the stock medium for the cultivation of bacteria. It is not so useful for fungi, but is given here, as anyone studying the foul-brood bacteria will need it. To prepare it, take 50 grm. (practically 1¾ oz.) of lean beef, chop it fine, add 100 ccm. water, and stand overnight in a cool place, shaking occasionally. Next day, squeeze out all the juice possible, and make up to 100 ccm. with water. Add 1 grm. peptone and ½ grm. common salt, and stand the vessel in boiling water for an hour. Filter through filter paper to remove the coagulum, and neutralise with soda as described previously. This may either be used as it is, or made up with agar or gelatine. The medium, with or without the addition of one of the above, is filled into tubes, as described for honey solution, and sterilised. Owing to its suitability for bacterial growth, it needs more sterilising than the honey medium; an hour on each of three successive days is probably right.

This medium may also be made up with beef-extract. To 100 grm. water add ½ grm. of extract (no peptone or salt being required). Neutralise, if necessary; add agar if desired; tube, and sterilise.

Bee-Larva Bouillon. This is prepared exactly as for beef Bouillon (first method), using brood (conveniently obtained from condemned drone combs) instead of meat. This is good for pathogenic fungi, and is a necessity for the cultivation of **Bacillus larvæ**, the causal organism of odourless foul brood.

Rice. Into each tube put 1 grm. of Carolina rice and 5 grm. water, sterilise for about 30 minutes on three successive days. This medium is useful for distinguishing between certain closely-allied fungi, which are of similar appearance but produce differently-coloured pigments in the rice when grown upon it.

That the above methods are rough and ready, I am well aware; but hope they may, for that very reason, be of use to those who have not had special training in bacteriology, and do not possess elaborate apparatus.

In conclusion, it may be useful to mention that empty plugged (with cotton-wool) test tubes, and other glassware, can be quite satisfactorily sterilised in an ordinary kitchen oven, if care is taken to place them in a lidless tin box (to avoid danger from splinters of glass, should any get broken). Some pieces of white paper put in with them should be turned a very light brown; provided they have been a reasonable time (say 20 minutes) in the oven when this stage is reached, they will have been sufficiently sterilised. To be more accurate, such glassware should be kept at 320° F. for one hour.

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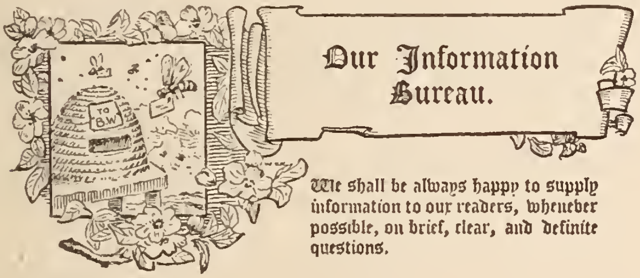

Our Information Bureau.

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

THE MODIFIED DADANT HIVE.

The original Dadant Hive evolved by the celebrated Charles Dadant was based on an appreciation of the advantages of a large hive with deep frames in contributing to the creation and maintenance of a powerful force of bees on whose strength and satisfactory accommodation their prosperity much depended. Its equipment was ten Quinby frames. It did not take, however, into consideration the already existing Langstroth frame in America; hence many who would have adopted it were debarred from a change. The Modified Dadant Hive recently introduced is declared to possess the following compromising features and improvements: (1) Eleven frames, Langstroth length, Quinby depth; (2) 1½ inch spacing of frames for swarm control; (3) six-inch extracting super; (4) Dovetailed body and regular reversible bottom and metal roof cover with inner cover; (5) Langstroth equipment easily used in connection.

EXPERIMENTS WITH APIS FLOREA.

We do not know of any successful experiments on the domestication of this bee. Considering the extreme delicacy of its comb, its poor foraging qualities, apart from its excessive smallness in size, it serves only to attract scientific interest.

THE STATUS OF NECTAR IN BOTANICAL SCIENCE.

This has been clearly summarised by Dr. William Trelease, of the University of Illinois, as follows †: When nectar is produced in flowers, and in some cases when it is outside of them but near them, it demonstrably serves to secure cross-pollination through the aid of insects, or humming birds and their like, when the flowers are long, tubular and red, as in the trumpet creeper, the trumpet honeysuckle and the scarlet salvia. It is then "**Nuptial nectar.**" When it does not serve the plant in this way, and so is "**extra-nuptial,**" it occurs in the neighbourhood of the flowers, as in cotton, sweet potato, trumpet creeper and paeony, where it attracts numbers of ants, which are often very pugnacious, and to the extent of their activities it prevents injury to the essential flower buds and flowers, especially in their early stages; or it occurs on developing leaves during the period of their greatest need. More rarely, as in acacias the leaves continue to secrete it during the season, so that those that are mature add to the protection of the younger leaves and the flowers and the young fruit. That neither of these functions is served in exceptional cases and that some flowers rely on the wind for effective pollination, or have lapsed into self-fertilisation; or that really pugnacious ants do not commonly frequent the extra-nuptial glands of most plants in temperate regions, and that some plants get along very well without such help, mark questions that will continue to stimulate observation and experiment. But nothing now known of the physiology of plants offers an alternative explanation for that which connects nectar with either pollination or defence; and until such an explanation can be found, nectar will continue to be regarded as connected indirectly with these services through insect or bird relations.

WIRING EXTRACTING FRAMES.

This is not quite necessary if full sheets of foundation are used, provided care is taken in extracting new combs. In the long run it pays to have the frames wired.

CELLAR FEEDING.

This is only an emergency practice. The advice given in America is to provide the colonies in advance with sufficiently liberal stores so that no cellar feeding will be at all required. Candy would undoubtedly be more suitable than syrup. In this country, on the other hand, it would be more advantageous to ward off starvation at the earliest opportunity of favourable weather during the winter by feeding rapidly with thick warm syrup containing a harmless preservative such as "Yadil." Going to the extreme measure of disturbing the bees by replacing empty combs with ones of sealed stores (should these be available) or with artificially filled combs is a better alternative to starvation. We have had no occasion to regret this desperate measure.

MOULDY AND "WORMY" COMBS.

Before giving the former to the bees to clean spray them with a strong formalin solution and place out in the sun for a day. Combs which have just been rescued from the attention of the wax moth should be disinfected with formalin vapour, or placed in a tight box charged with carbon bisulphide.

OUTDOOR FEEDING.

This is a boon for a large apiary where labour is a problem. The risk of inducing robbing is small when all colonies are strong. We use a special cabinet on legs, open at one side and with a slanting glass roof painted black. The feed is medicated with a harmless preservative and placed in a pail provided with a perforated wooden float. The pail is safely accommodated inside the cabinet, which gives excellent shelter to the foraging bees. It is very serviceable also for accommodating pollen supply with which a spare metal comb may be advantageously filled.

THE UTILITY OF OLD CELLS.

By scraping and partly rebuilding them, the bees make endless use of old cells, which become increasingly firmer and more protective. As to their sanitary condition with age, this is a different question. They may or may not be cleaner than new combs according to circumstances and methods. It is not unusual that they become dirty and unworthy of keep.

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† The Am B.J., Dec., 1919.

The Bee World.

THE OFFICIAL ORGAN OF THE APIS CLUB.

Edited by A. Z. ABUSHÂDY, F.R.M.S.

With the collaboration of: the Rev. John Beveridge, M.A., B.D., E.B : S.B.A. ; Miss Annie D. Betts, B. Sc. ; A. F. Harwood ; J. Herrod-Hempsall, F.E.S. ; C. P. Jarman ; W. H. Simms, B.B.K.A. ; and R. Whyte.

Literary Correspondence: Literary correspondence should be addressed to the Editor, accompanied by a stamped addressed envelope when a reply is expected. In view of the public character of this magazine and the almost overwhelming occupation of the editor, he relies on the co-operative spirit and good nature of correspondents in avoiding on the one hand unnecessary correspondence, and in helping on the other hand to reduce the postal expenses of THE BEE WORLD and **The Apis Club** which are exceptionally heavy.

Having regard to the limitations of our space, our able contributors will greatly assist by considering 500 words a maximum limit for any single contribution as an article. Letters to the Editor for publication should be very brief.

Business Correspondence: The Manager of THE BEE WORLD will be pleased to forward a list of charges for displayed advertisements to members of the Trade, and to reserve spaces for them on application.

The Supply of the Magazine: THE BEE WORLD is supplied at present only to members of **The Apis Club**. **Prospective members can join the Club at any time.** Back issues of THE BEE WORLD (second-hand or otherwise) as well as additional copies of the current number may be obtained, when available, by any member of the **Club**, on applying direct to its offices, at the cost of 9d. per copy, post free.

Stocks and Nuclei

Bred from Selected Strains of World-wide Reputation.

Special consideration to Members of THE APIS CLUB,

Price List on Application.

ARTHUR M. STURGES,
Shenstone, Hartford, Cheshire.

Special Prepaid advertisements by members of THE APIS CLUB are inserted at the rate of one penny per word ; minimum : one shilling. For non-members ; 3d. per 2 words ; minimum : two shillings. For box number : 6d. extra. Advertisements must reach us not later than the first week in each month for insertion in the corresponding month's issue.

VACANCIES FOR PUPILS—on an old established bee farm where work is done on a very large scale.—Box 27, B.W. Office.

INSURE AGAINST DISAPPOINTMENT—by getting your queens and bees from a place where I.O.W. has **never** existed. Italian queens and 3-frame nuclei, hardy and vigorous, bred for years in a cold North climate. List free.

IRISH HONEY—gathered principally from bramble, clover, and wild raspberry ; well ripened and matured ; in tins 7lbs. to 56 lbs. each. Prices on application.

5% discount to members of The Apis Club ordering bees or honey. Members when ordering are requested to forward their cards.—S. Crawford, Apiaries, Castlederg, Co. Tyrone, Ireland.

CYPRIAN BEES—For the finest strain of Cyprian bees which have won for themselves an international reputation apply to: Mihran G. Dervishian, Nicosia, Cyprus.

CONNECTICUT QUEENS—Highest grade three-banded Italian Stock guaranteed to give satisfaction. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease resisting qualities. Select Untested Queens, each: 1 dollar 25 cents. ; 6: 6 dollars 50 cents. ; 12: 12 dollars ; 50 : 47 dollars 50 cents.; 100: 90 dollars.—A. E. Crandall, Berlin, Conn., U.S.A.

DUTCH BEES—Selected from the best "Matthes" strains. Of proven hardiness, docility, and splendid foraging qualities. 5% discount to members of **The Apis Club**. Price List on application. Box 28, B.W. Office.

WANTED—"British Bee Journal" volumes, either bound or unbound (preferably the latter) for the years 1886-1899 inclusive. State price per volume and for the whole series specified.—M. C. Richter, Box 688, Modesto, California, U.S.A.

THE "ROYAL CARRIAGE" QUEEN INTRODUCING APPARATUS—The latest device for indirect queen introduction. A valuable, durable appliance which is intended for frequent use over many years The best material and workmanship displayed. 2s. 9d. each, post free. 10% discount to fellow members of **The Apis Club**.—E. W. Dempster, 169, Balfour Road, Ilford, Essex.

The Bee World

Founded 1919

An International Monthly Journal devoted to the progressive interests of Modern Bee Culture.

Edited by - - A. Z. ABUSHÂDY.

In vindicating the freedom of the Press, THE BEE WORLD gives full publicity, on questions affecting the advancement of Bee-keeping, to the views of all responsible writers, irrespective of their school or nationality, and without necessarily sharing their opinions. No literary responsibility can therefore be held by this Journal for signed or quoted contributions.

Publishers :

The Apis Club, Port Hill House, Benson, Oxon, England : An International Institute for the service of Modern Apiculture, and for fostering a genial spirit of scholarly brotherhood amongst bee-keepers of all countries, with the co-operative object of promoting their educational and material interests.

⁂ Membership of the **Apis Club** is open to all practical apiarists everywhere, and to all lovers of the Honey Bee. Annual Membership Fee : 7s. 6d., and includes free delivery of this Magazine, which is issued only to members of the **Club**.

Vol. I. Nos. 10-12. MARCH-MAY, 1920. Monthly.

Editorial.

"UNITED WE STAND; DIVIDED WE FALL." With this issue of THE BEE WORLD its first volume is brought to a close, only to mark the beginning, we hope, of a still greater effort towards the fulfilment of its ideal.

Born of courage, not caution, and purely for education, it has fought its battle in the face of great odds and denied itself every psychological factor within its grasp for reaching its first goal. This having been reached with the force of educating the public instead of pleasing them, and in spite of widely announcing its considerable difficulties and practically none of its successes, it has a perfect right to be proud of a final big achievement. This consists of a respectable circulation and of being the means of laying the foundation of an international institute which promises to be the biggest federation of beekeepers in the United Kingdom and the medium of beneficial international relations.

With files choked full of messages of appreciation, THE BEE WORLD can afford now to publish any of them while it denied itself this practice during its transitional period, lest it might gain the interest of pseudo-sympathisers who are worse than antagonists, lest it might develop a big organisation which nevertheless would be empty. It has every reason for being gratified with the quality of **The Apis Club** membership, if its magnitude is still far from the degree of its big ambition. This in itself denotes the great need for education. But just as the character of the work is unprecedented, so the development of this institute in no more than a year is nevertheless considerable. It took no few other organisations several years to achieve a fraction of this development, which would have been immeasurably greater if only our repentant sceptics have taken the trouble to investigate before wondering and gossiping, and if only those opportunists who are the last detachment of a vanquished army of retrogression had learnt the lesson and come forward to co-operate instead of misrepresenting and opposing.

Fig. 59.
A Symbol of Co-operation.

We have not treated the public as sheep, but as human beings in need of education and finally capable of educating. On this worthy principle **The Apis Club** developed. The utmost patience was displayed towards those who were, generally speaking, little responsible for the prevalent spirit of apathy and satisfaction. The leaders of the Craft were treated differently. When selfishness and flattery have been preached and practised by many, and are even boastfully defended, patience cannot be afforded. Indeed many so-called "leaders" proved to be smaller than their followers, and in far greater need of learning as to what is **dutiful.** This is the pivot of the difficulties of the whole movement and justifies recapitulation in profitable memory of the past and in good hope of the future.

(1) The Origin of the Movement.—Looking at Home conditions any impartial beekeeper cannot help at moments of reflection being amazed at the much wasted energy over party strife, which is often based on personalities not on principles. A decade has been wasted in discussing whether the oldest Association in the Country with a big membership is fit to live and whether the oldest English bee periodical which has a history behind it should not be boycotted instead of helped and improved. Similarly, another school of partisans have been considering the best means for clipping the tongues of those youngsters, and of the Scottish and Irish rebels who dare to question their authority and wisdom, both of which ambiguously based on " years of experience," the most popular and convenient cover for hiding ignorance. Between the duels of both offenders no one is permitted to pass forward. Should he dare to do so, he will be at first ridiculed and ultimately attacked and injured. Better education, co-operation and research were not only considered secondary or even superfluous, but their call was viewed with hateful suspicion as being a diversion from the " true " path, namely, whether the Craft should continue to obey the orders of this man or the other ! Little wonder that the battle has been looked upon as a life or death struggle......!

An examination of international literature does not reveal this degenerate spirit, however much may be said against the domestic strife of any beekeeping community abroad. In the United Kingdom it is hardly compatible with the high principles which constitute the great life of Britain. The only real explanation is that beekeeping in the past has been in this Country chiefly in the hands of the ignorant, who, though quite incapable of construction, are most capable of mischief. They have been fighting their old and the fairly recent organisations which have been rendering excellent service to them, and now on being confronted with a still more revolutionary and non-orthodox institute their patience was lost......

Only courage and faith could have broken this vicious circle, but at what a sacrifice to those who have stuck to this task in the face of almost overwhelming odds, it can be summed up by saying that it is almost unbelievable.

It is the depiction of history that commands this brief review of an ordeal, the passing agony of which may now be dismissed though remembered.

(2) **Its Conduct and Progress.**—Hardly did the first two numbers of THE BEE WORLD appear when different unchivalrous attacks began to be felt, let alone the great disappointment of those who were looking to the new magazine as the most suitable medium for ventilating their recriminations—the outcome of years of party strife amongst beekeepers in this country. Between oppositions, misrepresentations, callous indifference and neglect of duty on the part of " leaders " who do not know the meaning of a pledge, the work could not have developed at all, were it not that the principle of not accepting defeat at any price was faithfully observed.

A leading British bee journalist wrote to us more than once in the following tone, and his warning has been repeatedly endorsed by other well wishers: " If you will not mind my saying so, I rather think you are wrong to refer to the opposition in THE BEE WORLD. There are many people who, directly they know there is opposition to anything, immediately think there must be grounds for it and get away. This may be stupid, but we have to take people as they are and not as they ought to be. My advice is to absolutely ignore in THE BEE WORLD any opposition there may be. In full confidence of your scheme forge ahead, absolutely ignoring any opposition, except so far as it may affect your policy. People are sheep and you will get more members by acting as if everyone was joining, rather than complaining enough are not doing so." Well, we meant to appeal to the best of their faculties and results have fully justified that there is good in all of us. **If the conscience of the public is not sufficiently aroused, it is assuredly the fault of their leaders.**

Not only had the work been developed to the real disadvantage of no one, but to the advantage of everybody, including the misguided opponent. Instead of **The Apis Club** being transformed into a distinct party with a formal council to dictate to the members, good care has been taken, in spite of much persuasion, to insure in the first place the maximum possible membership during the first year, at the end of which the members are now left unfettered to decide for themselves instead of being dictated to. This presents a maximum of democratic spirit.

Similarly in regard to THE BEE WORLD, we took into consideration existing interests and the valuable services of our colleagues, and we believed that any service rendered to us intentionally at the expense of others was **not** to be appreciated. We have not only fulfilled our obligations but exceeded them. We have never followed the precedent of the Press in the sudden raising of the subscription fee or the advertising rates without the most generous consideration to original subscribers, who were voluntarily left to decide for themselves. The first volume will close with no few original readers receiving this magazine at 2s. 6d. per annum including postage, when the cost of production has increased over 400% and the value of the currency on the decline, so much so that the ridiculed yet fully justified £5 weekly minimum for a 44 hours work is being demanded by the Boot Trade in the United Kingdom. The Editor of this magazine works on his thankless task and **The Apis Club** work no less than 90 hours per week and has never enjoyed a single day's holiday for a full year, not excluding Christmas; and if indisposition and ill health have hindered him from time to time, he had to pay for it in the form of excessive overwork and further anxiety. Such a life —which is too bad for a dog—has been endured for a full year for the sake of an ideal; and if the Craft will only be able to build on this heavy sacrifice in health, money and time, it will never be considered as having been made in vain.

No society will permit the unnecessary interference of its members. **The Apis Club** files and books have always been open for inspection by all members who cared to take the trouble to verify the facts for themselves. These facilities have been utilised by visiting members, amongst whom is Mr. J. Herrod-Hempsall, the Associate Editor of **The British Bee Journal**. Although an exceptionally busy man, our friend has never hesitated to give us a helping hand which we gratefully record with his last verdict at the time we go to print, and it has not been his first appreciation of the work. Under the title " A Forward Movement " the following editorial appears in the **B.B.J.** for April 15th:

" Very shortly the anniversary of the institution of **The Apis Club** will be due. A general conference of members in the United Kingdom will be held at the Central Hall, Westminster, on Saturday, May 29th, to decide on the future constitution of the Club (the draft of which is well thought out, and is most embracing),* the election of its council, the selection of its offices, and on other important matters relative to the scope and conduct of the work, including the future of THE BEE WORLD, its official organ, which will soon be completing its first volume.

It is gratifying to find the membership of the club, despite all obstacles, is growing at a steady and sure rate, already embracing several hundred members, the rate of increase per month alone accounting in itself for the membership of a respectable society.

In view of the non-party, the national, as well as the international, character of the work, it is to be hoped that members of **all** associations are well to the front in its enthusiastic support, so that it will be truly representative and impartial. The advantages of the membership of this research, educational and co-operative institute far exceed the comparatively small membership fee. This in itself, apart from the lofty spirit of public duty, should win for the Club a still greater measure of support, which cannot be better shaped than by a more rapid increase of its membership, by the liberal patronage of the whole trade to the publicity section of its official organ, and by a greater education of the public as to its object and activities.

The scheme has entailed during its organisation phase a heavy sacrifice and a full sense of responsibility, both endured with an admirable spirit, as every member who has visited its offices and inspected its books and files must have verified for himself or herself. On the basis of this exceptional self-denial and tenacious perseverance in the service of such an ideal, the British bee community should be capable of worthy construction for a big forward movement.

Seeing that international apiarists everywhere are appealing for the whole hearted support of the work, we make no apology, as the leading bee journal in this country, which has given it sincere help from the beginning, in repeating our appeal."

In the same number of our contemporary Miss Annie D. Betts, B.Sc., launches the following candid criticism under the title " Wake up England ":

" England has at present the honour of possessing a journal, THE BEE WORLD, which is primarily devoted to the encouragement of beekeeping research. It provides a means of publication for any beekeeper who has a discovery or idea to impart to his fellows, and is deserving of much more support than it has hitherto received. Research is—or should be—neutral ground, on which no private political or other controversial views should intrude, but all should work together for the advancement of knowledge. It is to be hoped that British beekeepers will awake to a sense of their opportunity and support THE BEE WORLD and **The Apis Club** liberally. The past years should have taught us all the value of scientific knowledge and the danger of neglecting it; let us show that we have learnt our lesson.

As my name appears on the list of the editorial staff of THE BEE WORLD, it may be well to state that I have no financial interest whatever in the success of that journal, and make this appeal solely from a wish to see wiped out (as far as beekeepers are concerned), the reproach of a contempt for science under which our nation labours."

Compatible with the rules of decency in publicity, both concise statements have provided much food for thought and an accurate review of principal data.

(3) **The Issues at Stake.**—The Founder of **The Apis Club** and THE BEE WORLD gratefully acknowledges the exceptional confidence placed in him by hundreds of beekeepers in this country—an unqualified confidence in his honour and personality, and for this alone under the most cruel circumstances his actual slavery was worth his endurance. At the same time, it is on record that British beekeepers did not sufficiently rise to the occasion, primarily not through their fault as much as through the miserable example of those who should be fit to lead. The few exceptions do not count.

He equally acknowledges with gratitude the exceptionally generous messages of encouragement which count by the hundred from active sympathisers. It is certainly no small consolation in

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* THE BEE WORLD, February, 1920.

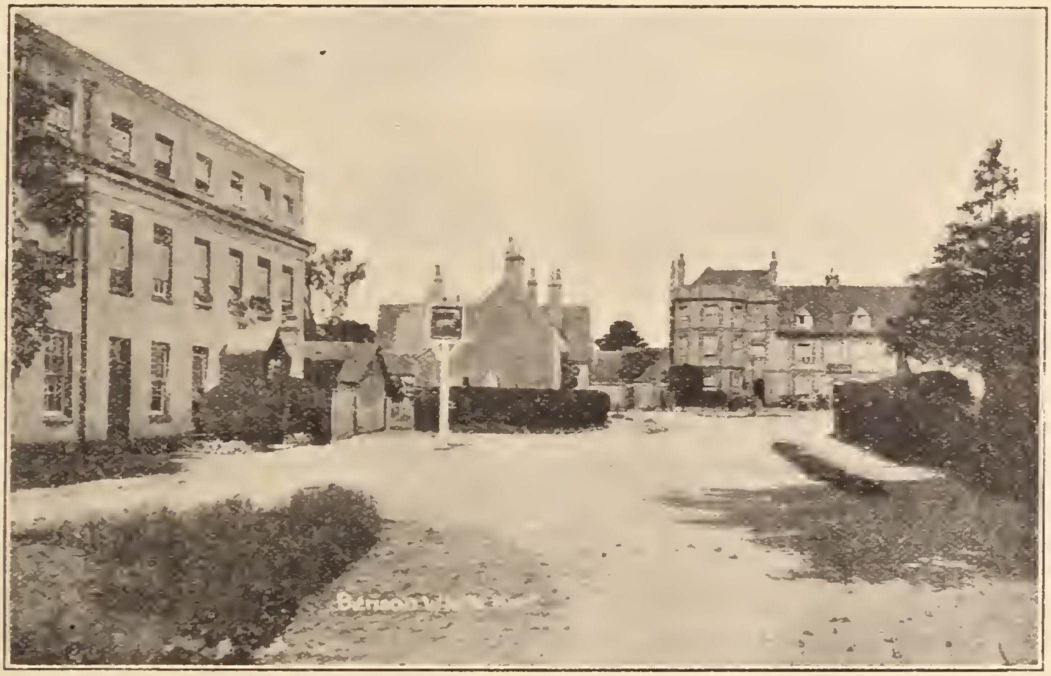


Fig. 60.

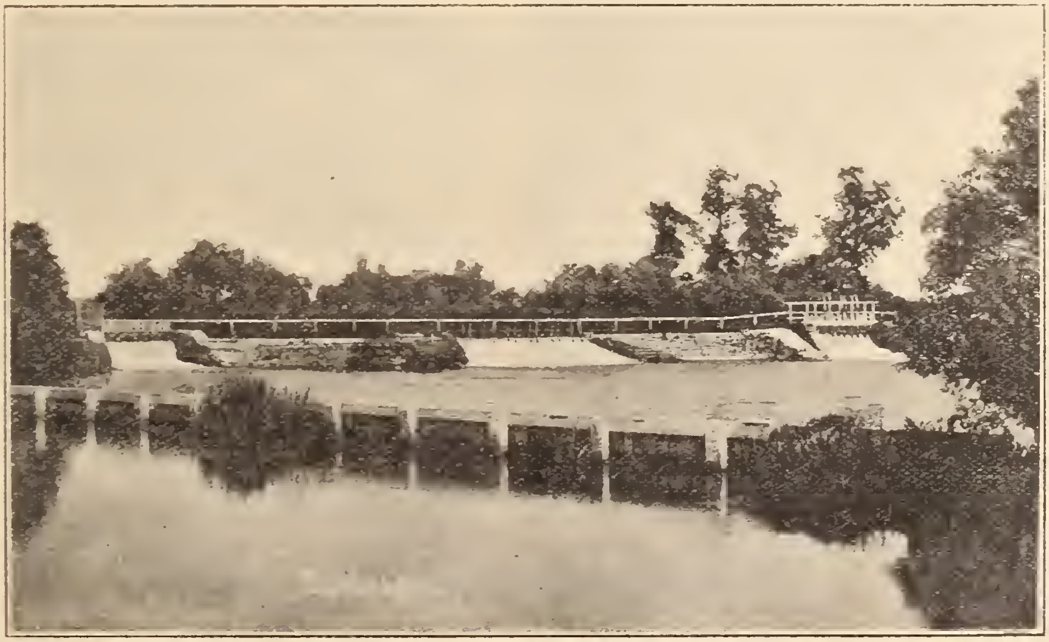


Fig. 61.

Two familiar sights at Benson, the birthplace of The Apis Club and The Bee World.

an hour of trial to receive, for instance, from our good friend, Mr. Isaac Hopkins, the father of N.Z. Bee Culture, the following message: " Your ambition to establish an independent and international bee magazine is highly commendable and does you great credit. It is, as you are doubtless aware, the fate of all pioneers in new departures to receive kicks and cuffs from narrow-minded and bigoted individuals. I have had my share, so can speak sympathetically. The only course is to aim for the goal you have in view and fight till you reach it. My erstwhile opponents are now among my staunchest supporters. I can honestly declare that out of the few numbers of THE BEE WORLD that reached me, I have read more interesting items from the Bee World's literature in it, than from my 43 years' numbers of another well-known periodical. Your foot notes are in my opinion a grand feature, one I followed myself."

The above message is typical in essence of the regular appreciative letters which reach us. But if any educational work were to be built on testimonials, is such work worth being called educational, and is it at all worth slaving for? We did not think so. There is all the difference between recording messages of appreciation or a fraction of them when a work is already accomplished and between utilising them as psychological factors for showily constructing what is bound to become then an empty building.

This has been an important guiding principle and it is therefore one of the issues at stake. Is the work to be developed on its merits or just because it pleases this leader or the other? Is the vicious circle of partisanship which has at last been broken by the success of **The Apis Club** to be re-instituted just because of the heavy responsibilities of the work? Is the weight of such responsibilities which was borne for a year by the few too much for the many? The further development of this Institute does not only mean the extinction of party strife in this country, but the propagation of a better spirit of education and co-operation and the establishment of helpful international relations which are bound to result in the uplifting of British bee culture to a level still higher than the Cheshire period. That **The Apis Club** can be developed independently as a National and an International society there need be no doubt. Of all the beekeeping organisations in the United Kingdom, the **Club** has commanded the confidence of beekeepers from **all** sections and is a fitting medium therefore for the realisation of aspirations which need big co-operation. It has embodied several hopes from scientific research to the marketing of honey. It can be made the means of social intercourse amongst beekeepers, especially when taking holidays, of a progressive educational movement, of industrial co-operation and of many other activities if the Craft will only rise to the occasion. That they **can** rise, there need be no doubt. But so long as the best leaders who ought to combine a big driving force with their knowledge prefer to be silent, the results will be limited to the efforts of those who dare to speak loudly and to push. The poor " leaders " who prefer to intrigue and misrepresent, and who certainly need therefore more of our sympathy than we need of theirs, are of course outside our respect and consideration. These hopes embodied in **The Apis Club** are amongst the issues at stake. If, on reviewing all the circumstances of the case, the General Conference of members decides to transform the **Club** into a purely academic institute, their advice has simply to be accepted.

THE BEE WORLD is no more than the mouth-piece of this movement; but even as such, it is of considerable significance. After all the sacrifices endured for its development, it is still unselfishly offered, without any liability, for development as a public property through membership of **The Apis Club,** and thus continue as an unfettered medium of education. The experiment will be put to the final test at the General Conference of members on the 29th of May. But, as we pointed out before, it is really of wider interest and concerns the whole Craft. Is the offer to be accepted? The founder of the magazine considers the fulfilment of this aim the achievement of an ideal. He has no wish to develop it as his property unless the Craft will admit their lack of enterprise. Our members will not be blamed as a body when they form part of the British Bee Community as a whole to which the offer is made. Our institute is merely a medium. Will they awake to a sense of their opportunity? If not, it will be an admitted weakness on our part for the reckless love of an ideal to accept fresh obligations after fullfilling old ones.

Original Contributions.

Originality is the one thing which unoriginal minds cannot feel the use of.—J. S. MILL.

Bee Diseases Legislation in Great Britain.

By JOSEPH PRICE, B.B.K.A.

Expert and Lecturer in Beekeeping, Staffordshire County Council.

The reason why the subject of legislation on bee diseases is claiming so much attention from beekeepers at the present time is not difficult to ascertain, because very few districts have escaped a visitation of the recent epidemic known as " Isle of Wight " disease.

Not only so, but seeing that up to the present no reliable cure or even prevention has been discovered, it is absolutely necessary that something should be done to check the havoc made by this vile disease.

Therefore, while a great many beekeepers think that legislation is the salvation, others appear to be against any change whatever, at least, I was under this impression until I attended the recent Conference at Westminster.

It was obvious that at the above meeting both parties were represented and it was very gratifying to know that at least on some points all were agreed.

Some time ago, I stated my views on this matter in the **B.B.J.** and intimated that with legislation we should get the following :—

(1) Control of bee diseases; not, as some seem to imagine, control of healthy bees.
(2) Protection from careless beekeepers.

Consequently for both parties I gave my views on what I think is essential if diseases of bees are to be controlled, and classed them as follows :—

(A) Compulsory registration of all beekeepers.
(B) Heavy fines for allowing infectious materials, such as combs, etc., to be accessible to bees.
(C) Compulsory notification of disease.
(D) An Order to regulate the importation and removal of bees by permits.

It was very pleasing to note that at the above named Conference the principles of A, B, and D were accepted unanimously and C was dropped on account of certain difficulties which would crop up in presenting the Bill to which I am quite in agreement.

In working out these suggestions there should be no difficulty as to A. Simply make the present voluntary registration scheme (for bee food) compulsory and the same authorities, the " Bee Committees " would deal with it. These same authorities could also deal with B and I believe this bugbear of present day beekeeping would soon disappear, probably without recourse to force, when it was known that such carelessness was liable to a penalty. Regarding C, an order issued making disease notifiable does not necessarily mean an invasion of every beekeeper's place by an army of inspectors as soon as the law comes into force. No. It means that when suspected cases were reported, an inspection would be necessary and precautions would be needed to prevent the disease from spreading to other stocks and apiaries.

This does not mean wholesale destruction of apparently healthy stocks in the same neighbourhood or even apiary. Far from it. The district would be scheduled as an infected area and a watch would be kept for subsequent outbreaks.

On paper, D would for a time be hard on dealers, and heather men would probably feel it for a season, but in practice it would only affect those having had a recent outbreak of disease, or those residing in infected areas. Those possessing only healthy stocks would easily secure the necessary permit for removal.

It will be seen from the above that I have placed great confidence in the County Bee Committees for the working out of these regulations, and I certainly believe that if the Bee Committees are composed of, as they should be, the best and most level headed beekeepers from the Counties and the Associations, they could make legislation a success without creating any ill feeling with any beekeeper in the County that is trying to do the right thing.

The greatest handicap a good beekeeper can have is to be surrounded by careless neighbour beekeepers, and I am convinced that if legislation can only get rid of possessors of bees of this type (I can't call them "beekeepers") and their infected tackle and appliances, then the beekeeper that goes in for beekeeping on a large scale together with his brother who only takes it on as a hobby, being a true lover of the bee, would soon be able to rid this country of disease.

County Bee Committees should not only see that regulations are carried out, but they should see that the Educational side of Beekeeping was not missing. Lectures, literature and every means possible should be used, not so much to make more beekeepers, but to make better beekeepers of those that already possess bees.

My experience is that it is not always the uneducated man that neglects his bees, for persons whom we usually consider above reproach in respects to cleanliness, often keep bees under conditions that no other animals live under.

Much useful work could be done if these County Bee Committees work amicably together with the Beekeepers' Associations in their areas, and by their combined united efforts they were determined to see that when legislation comes into force, it was a success and a help to Beekeeping, not a failure and a setback.

In this way very few inspectors would be needed and then only in obstinate cases where persuasion from the local authorities had failed to rectify matters.

Personally I think that if the fact became known that persons who keep suspected and tainted combs on which bees have died, are liable to a fine, everything would be cleared out for fear of an inspection and we should get rid of such shady tricks as attracting neighbours' swarms to infected hives and dealing transactions that are not always above board.

It will be observed from the above that if we are to get the best possible results out of legislation, every beekeeper must begin by doing the right and straight thing himself,both to his bees and for his neighbour. Not imagine, as I have known some do, that all we have to get is legislation and then disease and everything else bad belonging to bees will be gone. It won't. Legislation will rely on its success for every individual to do his utmost and then with the help of legislation administered by a proper qualified authority, good results will follow.

In the interests then of proper administration of legislation, it behoves all beekeepers to see to it that the Bee Committees are composed of men of the proper qualification, beekeepers at least, and interested in the betterment of the conditions of beekeeping.

This should be done at once, if you wait till we get legislation it may be too late.

Bits of Foundation.

By J. HERROD-HEMPSALL, F.E.S.,

Associate Editor, "The British Bee Journal" and "The Beekeepers' Record."

BEE DISEASES LEGISLATION.

The keen discussions on the subject of Bee Diseases Legislation is a healthy sign of the times. When this is accompanied, however, with unfounded suggestions and accusations, not productive of either a clear issue or of the harmony which is most desirable for safeguarding a forward movement, British beekeepers are not likely to enjoy much respect in the eyes of international apiarists, especially when one set of their leaders hasten to accuse the others of bad faith, just because they differ from them on matters of principle and procedure. I have pleasure therefore, Mr. Editor, in endorsing your appeal for amity and concord, compatible, nevertheless, with the sincerest support of principles. In my capacity as Associate Editor of two other bee magazines in this country, I have done my best to cultivate this good will and have looked on your criticism of party duels and the like as supporting my own policy. So far as Legislation is concerned, I have also done everything in my power to stimulate beneficial discussions, and if the Government have taken notice or otherwise of these discussions, they alone are entitled to the logical consequences of approval or criticism.

This brings me to the subject of the recent London Conference. I have looked upon this Conference not as representative of every beekeeper in the country but of different schools of beekeepers, and especially of those who were thought to be the strongest opponents of Legislation. Those who were in favour of Legislation represented County Associations, or County Bee Committees, whilst amongst those who were thought to be against Legislation were some who were not entitled to attend on that basis.

The Government have evidently considered the best course for ascertaining the nature of the opposition to Legislation, compatible with their desire to introduce some helpful measure during the 1920 season, as otherwise their re-stocking scheme is bound to remain threatened at any time with an epidemic of foul brood or malignant disease. None of the critics of the Government have advanced an alternative concrete proposal after taking into consideration **all** the circumstances of the case. This does not mean to say that I would not have welcomed a more representative Conference, but in all probability the procedure for effecting this would have taken several months and at the big risk of discouraging the progress of the industry.

I do not agree with Mr. Whyte's view that the proposed Bill is not of an educative basis, taking into consideration the full explanations advanced on behalf of the Government at the Conference. In fact this was particularly emphasised by Dr. Keeble and Capt. Wellington. Let us not forget that the Bill is still open for amendments and for incorporation in it as articles any of the explanations offered, should there be a strong demand for this proposal advanced in THE BEE WORLD, and should this be found practicable. The success of Bee Diseases Legislation in this Country depends on the good will and co-operation of beekeepers. We should have these from the beginning.

THE STANDARD FRAME.

It is phenomenal that when old variations in the types of frames in different countries are dying or dead, new ones are springing up. In America the **Dadant Frame** which has just been introduced for the "**Modified Dadant Hive**" represents the Langstroth in length and the Quinby in depth. I have never denied that the Langstroth is the standard frame of America, but I merely emphasised the fact that in every country one is bound to meet with some variations, and with different schools of thought. It is significant that the new American movement is based on the adaptation of the present standard American frame with just its increase in depth. This is what I have been advocating in regard to the British Standard. The **14″ × 12″ frame** does not only equal but surpasses the 16″ × 10″ frame in many respects and will admirably lend itself to localities where it is practical to use it. As to its practicability in relation to new hives, it will suffice to mention that it is already championed and produced by nearly all leading firms in the United Kingdom.

MARKETING HONEY.

The movement by **The Apis Club** for stimulating the home production of honey on economical lines has my fullest sympathy as my independent writings in the **Record** testify. Fair competition depends on adequate home production at an economical cost and on better attention being given to co-operative marketing on advanced lines. This in itself is a big task, the fruition of which cannot be achieved without enthusiastic collaboration of all the bee farmers and the would-be commercial apiarists in this country, whether they are great or small.

A QUEEN SUNNING HERSELF.

The interesting communication from Mrs. G. B. Mitchell on this subject matter in the January number of THE BEE WORLD confirms my view based on some observations, corroborated by others, that the queen **does** leave the hive occasionally, apparently for no purpose other than taking an airing. This accounts for the mysterious loss of queens which cannot otherwise be accounted for.

SPACING FRAMES.

Seeing that the British spacing of frames permits the building of deep combs (which means greater stores in winter), and further will permit of the accommodation of more seams of bees when clustering between the combs, there is no ground whatever for regretting its past use and there is no reason for its alteration. Of course with large combs, a greater amount of stores will be available, but with the $1\frac{9}{20}''$ spacing in conjunction with large combs there is a still greater advantage in relation to stores, apart from the important fact of obviating small and detached clustering.

THE FAILURES (?) OF THE B.B.K.A.

For its objects the **B.B.K A.,** during its many years of existence, has made every possible effort in serving the British Bee Community. Its few critics are its former pupils, and no open-minded leader of the **B.B.K.A.** will be in the least offended by any honest criticism, however severe this may be, seeing that in a sense it denotes big expectations. But since their realisation depends much on funds, I feel sure one of the knowledge of Mr. Gilbert Barratt, when reviewing matters impartially and in comparison with the work of all other organisations in this country, will feel less inclined to say that the strongest Association in the country has "outlived its sphere of usefulness." The **B.B.K.A.** cannot be buried alive, and as the Editor has truly said before, it can only be further improved. This obviously depends on ways and means. In his capacity as Associate Secretary of **The Apis Club**, Mr. Barratt would be rendering the Association as well as the Club a mutual service by enlightening as many members as possible of the former regarding the aims and scope of the Club's work.

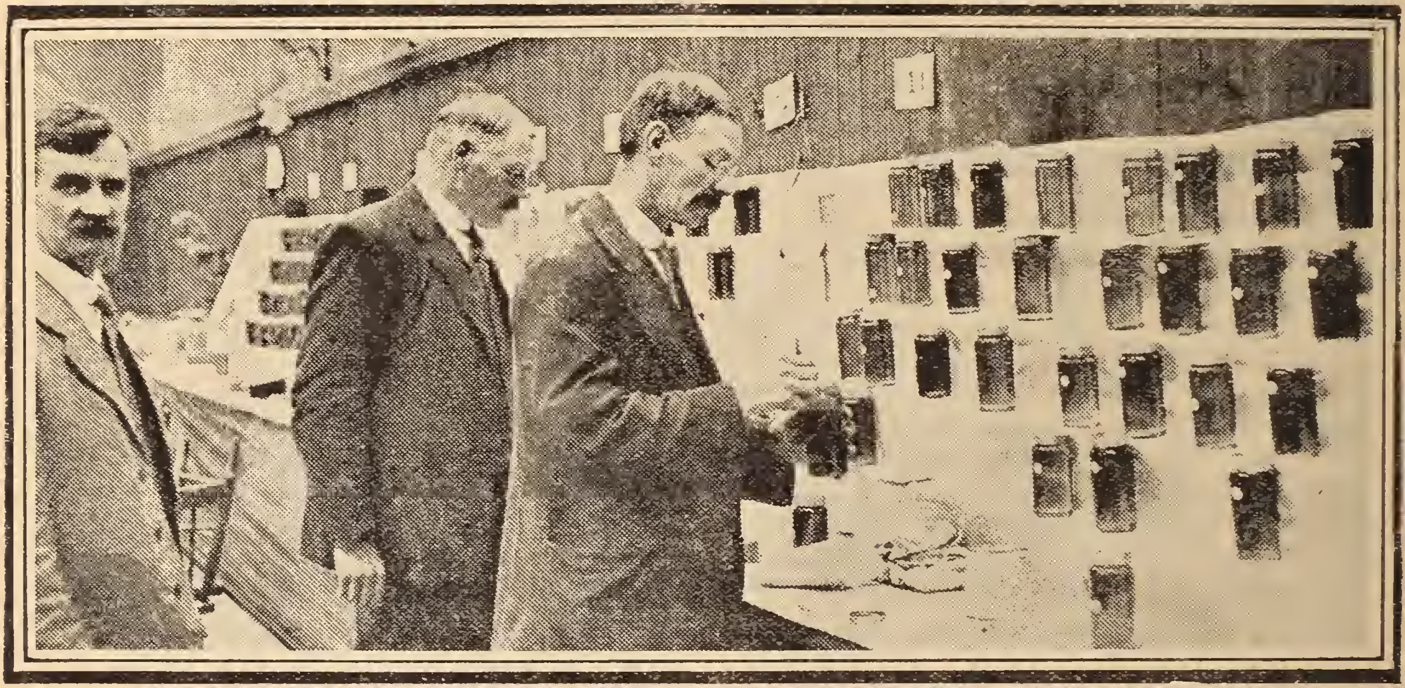


Fig. 62.

Three Leading Lights.

We are enabled, through the courtesy of the Editor of the *Staffordshire Weekly Sentinel*, to reproduce this unique photograph, showing Mr. J. Herrod-Hempsall, F.E.S. (on the right), judging the honey exhibits at Stafford. Mr. J. Price, C.C., Bee Expert, is seen behind the judge, with Mr. W. Griffiths, Hon. Sec., on the left. It is of special interest since the pages of this number of THE BEE WORLD are graced by original contributions from these three distinguished bee men.

The Coming State Supervision.

By W. GRIFFITHS,

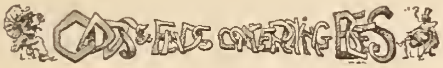
Hon. Sec., Staffordshire B.K.A.

Many of the proposals that are being made in the Bee Press, as to how Bee Diseases Legislation should be carried out, will not, I am sure, commend themselves to the general body of beekeepers, or to the **Ministry of Agriculture.** Some of the proposals would be very costly, and a large body of officials would be required which the industry cannot afford; other proposals are so complicated that a beekeeper would require legal assistance to carry them out. Let us, therefore, ask for a simple measure empowering the Ministry, in consultation with a standing Board of technical advisers, to issue Orders dealing with the different aspects of disease as they arise. I would suggest that the **Advisory Board** for England and Wales consist of: (1) a beekeeper who is also a bacteriologist, (2) an apiarist whose sole profession is the production of honey, (3) one breeder of queens and bees, and (4) and (5) one representative from each of the **B.B.K.A.** and **The Apis Club.**

The Contagious Diseases (Animals) Act is a suitable measure to refer to in our discussion. It is very simple and easily carried out. The local authorities are advised of an outbreak of disease through their officials; in many cases the police act as officials, but not as experts ; it is left to the Veterinary Surgeon to decide as to what the disease is. The various Orders are carried out promptly and willingly in most cases, because the Act is fair and the regulations are simple and the measures taken are usually effective. Again, the Orders relating to "black scab" in potatoes are very stringent, but they are easily understood, and are carried out by practically every potato planter in an infected area, and what is more, by a very small staff of Inspectors. The disease has cost the country an enormous amount in loss of vegetables and cost of experiments, to discover immune varieties. If it had not been for this work we should have been by now dependent upon other countries for a large proportion of our staple vegetable. There is no cure and I have never yet heard of a preventative, and yet in this county (Staffs), which is a scheduled area, we grow enormous crops both on allotment and by the farmer in the fields. The penalties for non-observance of these orders are heavy, but there are very few cases of prosecution. So in my opinion the salvation of the Bee Industry lies not in complicated measures which cannot be understood. A beekeeper has not the time to wade through folios of an Act of Parliament when his bees are sick ; let us concentrate our energies therefore on a measure that can be worked.

It would be well-nigh impossible to obtain the services of a large body of Inspectors who could satisfy all tests as to a knowledge of Bee Diseases, many lifelong beekeepers cannot easily recognise Foul Brood even after 40 years of education by the Bee Press and the very excellent manuals sold and the leaflets issued by the **Ministry of Agriculture.** How much more complex then is the diagnosis of I.W.D. which has so many different phases ? Crawlers are all over the apiary on a windy day, yet how many beekeepers have been nervous and downhearted over this or a case of spring dysentery ? The nature of the disease demands an expert, thoroughly conversant with its many forms ; one who also understands bacteriology ; and also must be a first class beekeeper. These requirements regulate at once the size of the staff ; for there are not many men who would be capable and at the same time feel disposed to accept a Government appointment.

The conference at Westminster, whatever its faults were, practically unanimously decided in favour of the principle of legislation and the delegates were quite agreed on two or three salient points, and whatever form legislation takes it will be certain to hurt someone. My County Association has passed resolutions in various forms in favour of legislation for 20 years, and at representative meetings. On the last three occassions there has been present at least 40% of the total membership. I.W.D. is apparently weakening in its virulence and to finally kill it and also prevent its resurrection, we must have an efficient and workable Act, and if it is modelled on the lines of **The Contagious Diseases (Animals) Act** or the **Potato Disease Act,** it will mean a regeneration of the Beekeeping Industry in this country.



By R. WHYTE.

THE FUNCTIONS OF THE HONEY BEE.

In animated nature there is, I think, no animal with such marvellous variety of functions as Apis Mellifica. The wonderous complexity of its physiology is only equalled by its highly developed anatomy. The honey bee can gather nectar and digest it. It can gather pollen and other proteid forms of food and convert them into assimilable food. It separates the pollen from honey in its honey stomach or sac. Its wax scales it takes from venter to mouth, kneads them and fashions them, bit after tiny bit, into that ever wondrous piece of work, the honey comb. It can prepare food to feed queen and larvæ with. It can gather that resinous matter propolis. Is it surprising that the anatomy of the bee excites our wonder ?

THE HONEY SAC.

The other month I dealt with the genesis and structure of the Queen. To-day I will deal with the stomach-mouth of the Honey Bee, taking the late Professor Cook, of California, as our mentor.

This stomach-mouth is a small spherical organ situated at the hinder end of the honey stomach or sac. Let us picture, if you please, the honey sac as a small horizontal bag, which as we pull the head from the thorax or the thorax from the abdomen of the bee, often comes out so that it is plainly visible. Let us also picture a minute apple-shaped body, at the very hinder end of this little bag. Imagine this little apple cut into quarters, and imagine these quarters slightly reduced, and the skin not cut, except a small opening at the stem end of the apple, which is forward, and a second small opening at the blossom end, which, of course, is at the extreme hinder end of this little sac. Picture again numerous hairs on the inside of these quarters, all pointing back. It is easy to demonstrate all this if we kill a bee and at once separate the thorax and abdomen, pulling out the honey-stomach. If we put this in a warm saline solution, say of common salt ($\frac{3}{4}$ to $\frac{1}{2}$ per cent. of salt in water), and open it under a good dissecting microscope, we shall see the four quarters of this stomach-mouth constantly open and shut, or pull apart and then close together, thus enlarging and reducing the space between the four sections. It is obvious what the effect of these motions will be. As the quarters recede, honey from the honey-stomach will push in ; as they close, they close first back, and the honey is again thrown back into the honey-stomach. The pollen, however, is caught by the hairs, and cannot return with the honey. Thus all the time that the bee is gathering, this little honey-mouth is actively engaged in straining out the pollen from the nectar. We understand, then, why the nectar goes into the cells of the comb so free of pollen. It may not, usually will not, be entirely eliminated, though we may expect very little and will rarely be disappointed.

BEE DISEASES LEGISLATION.

I have carefully scrutinised the February Editorial on "Bee Diseases Legislation" and with your permission, Mr. Editor, would submit the following brief criticism.

In the first place I fail to see why, if there has been a "storm of appeal" for the introduction of Legislation in this Country, the **whole** Craft has not been properly represented at the recent London Conference. Either no decent appeal has been made or the Government have entirely failed to appreciate the essential quality of impartiality which is to be expected, even from a party Government, in an industrial question of this character. The method of convening the Conference, the constitution of the latter, and the method of its conduct represent an almost unbelievable picture of stupidity and partisanship which are unworthy of those who profess to be carrying out a national policy both in the letter and the spirit.

As to not inviting the **Scottish Beekeepers' Association,** you seem to think, Mr. Editor, that just because the **Scottish Board of Agriculture** is most appreciative of the work of the **S.B.K.A.,** therefore it follows that if our Board decides to extend Legislation to Scotland, they will not fail to consult the Association. You are wrong in this impression. There is no proviso in the proposed Bill, a copy of which is now before me, that the **Scottish Board of Agriculture shall** take the opinion of Scottish beekeepers before this can be done. There was some pretence of democratic procedure gone through by the **Ministry of Agriculture** so far as England and Wales are concerned ; but Scotland is left in the hands of the **Scottish Board of Agriculture** entirely.

Frankly, I am against any kind of regulative legislation, for the simple reason that I sincerely believe that it would frustrate educational efforts which should be built on a conscientious spirit, enforced by loyal co-operation amongst organised beekeepers themselves, and not on fear of official interference. In criticising your comments—and although we are both aiming at encouraging better education and better research, rather than encouraging greater idiocy—I have at the back of my mind a feeling of antagonism essentially different to your attitude.

Frankly, again, I have no hesitation in saying that the present Bill, even embodying the annotations of Dr. Keeble and Capt. Wellington, will not only be useless, but a positive curse to beekeeping. We had better do entirely without it than accept it temporarily as a beginning for a better measure. It is sure to prove a bad beginning. As there is nothing—absolutely nothing—of a genuine educational character about this Bill, can it be productive of anything except ill ?

I have consulted many friends who are in favour of legislation and put it to them as to how **this** proposed Bill could be amended to conform to your suggestion, Mr. Editor, for an educative measure ; and in every case the opinion was expressed that there was no framework whereon this could be incorporated.

In terms of your oft expressed desire for legislation of a certain character, there is no getting away from the fact that this Bill, if passed, would be worse than useless, and by all means should be opposed. It does not necessarily follow that because the present Parliament are almost solid behind the Government that they will not heed the voice of reason. Opposition to the Bill should be based on pure industrial and educational principles, not on a spirit of partisanship ; and in the face of such opposition I feel sure a lot of good will result. The Government will then learn a good lesson and will follow quite a different policy of construction and progress. So I do not think your fears regarding this point are justified.

I endorse your appeal to the Secretary of the **B.B.K.A.** to use his influence, even at this late hour, for persuading the Government to follow a more democratic course ; for it is on record that the recent demonstration is nothing but a fiasco and is entirely lacking both in sincerity as well as in broad vision. It is an amazing attempt to imitate others and to adapt the Craft to the wrong views of Officialdom instead of heeding the voice of science and experience, and acting accordingly.

The various States in America started as a rule with a Bill in terms such as this proposed one of ours and, on proved failure, some States passed their second and even their third Bill, each Bill adding more power and weight to the "Big Stick." With what result? Increase of disease all the time. **Now,** after twenty years of futile tyrannous efforts and blasted hopes, we should have the inauguration of a sane educative policy to take the place of the confessed failure of repressive legislation.

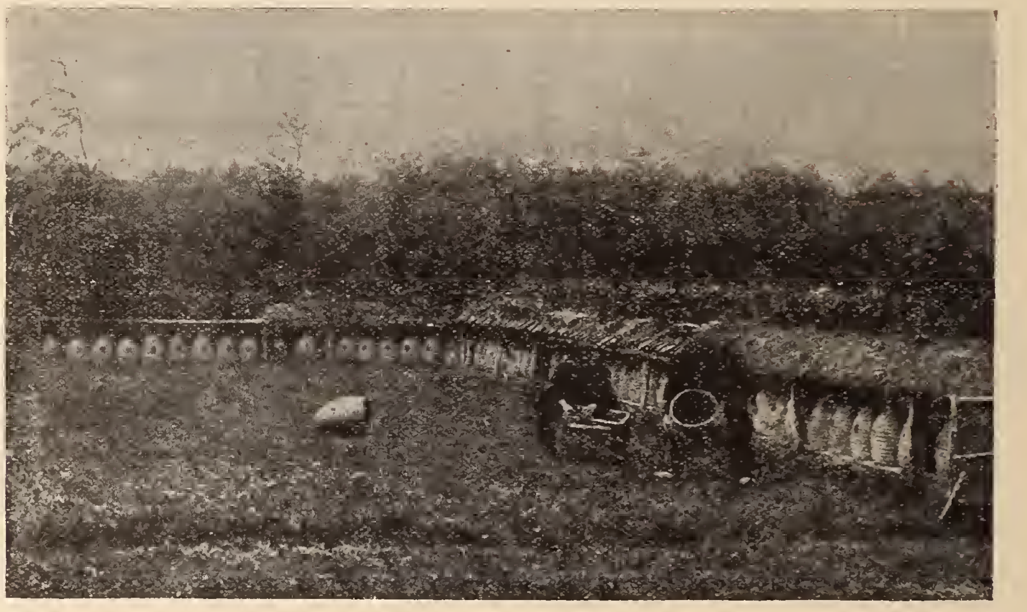


Fig. 63.—A Dutch Bee Farm. Note Entrances to Skeps high up.

DUTCH BEEKEEPING.

Our Editor has intimated he wants some notes on "Dutch Beekeeping," and this recalls my visit last summer to Holland, where I went thirsting for information. At every point Dutch beekeeping differs from ours. Here we work for honey, **not** increase ; there they work for increase, **not** honey, as their primary object. There are no tiered up bar frame hives in Holland. Although there are frame hives in use there are no "skyscraping" results.

In this land of Gipsy Bee Culture advantage is taken of every pollen source and honey flow. Beekeeping cannot pay in the Netherlands without practising nomadic methods.

In the Spring the bees are taken to the orchard districts where there are hundreds of acres of cherries, apples and pears, as well as raspberries and strawberries grown. The honey gathered from these sources is never extracted, it is manufactured into bees. Others again, in the Spring, plant their bees down in the rich fields of rape seed. Dandelion also is universally depended on for brood rearing.

In the lull that follows the Spring flow some skeps show signs of swarming, and these are often "drummed" for first swarms. The next flow is from clover ; after that there is a migration to the buckwheat fields. This is a very uncertain yielder. It is said the weather should be "not too warm, not too cold, not too dry and not too wet" before buckwheat is any good in the way of nectar secretion. **I shall not soon forget my first sight of these buckwheat fields. With hundreds of skeps all around, the air was simply alive with bees, and the roar of them was a something that will live as a rare memory with me.**

The heather harvest is the last crop and the one most is expected from. Sad are the tales told of blasted hopes and great losses accruing some years on these heath clad uplands of Holland. In 1913 it is reported that 14,000 colonies died of starvation on the heather moors on the borderland near the German frontier. This on account of unusually cold and rainy weather ; the beekeepers not realising in time their condition.

But to hark back. The Dutch bee farmer of the southern sandy part of the country, works early in the season all he can for swarms and casts. These casts are rather small and by mid-July have still small combs. They are brought by the thousand to the Bee Market at Veenendaal, Klomp. This village is in the Geldersche Valli, one of the most picturesque parts of Holland. For hundreds of years this village has held its market for the sale of swarms of bees in straw skeps.

These skeps are taken by the Bee Farmers to the buckwheat fields. If, as is occasionally the case, the yield from buckwheat is good the skeps may be filled in two or three weeks. When this does happen they are plundered and the bees are expected to build up again from the heather flow. More often it is a question of the last crop being a buckwheat-heather blend. If the yield has been worth while the bees are generally killed and the honey pressed. The farmers buying new swarms the following year at the market.

From the above it will be noted that in Holland there is no profit from bees except by following the blossoms. Also, be it noted, there is practically no comb honey produced for sale, as skep bee culture is overwhelmingly predominant. In connection with this I may say **there is no race of bee in the world that produces whiter finished combs than the Dutch bee.**

It is acknowledged, I think, that skep-bred queens are the finest procurable ; certainly these Dutch queens have a hard time of it. Encouraged in early Spring to build up they are again pressed to a final effort in late Autumn ; the compact mass of brood in late September ensuring the right kind of bees for wintering.

It may not be amiss, Mr. Editor, in these notes on Dutch Beekeeping to explain how I manage my Dutch bees As you know, **I favour a system of management based on swarming.** Some of my reasons for this will be apparent as I proceed. Swarming is, of necessity, the essence of skep management. In recognising this natural habit, is there a method of utilising swarming to one's advantage in the production of honey ? Undoubtedly there is.

In my practice I take advantage of the well known fact that **there is no energy for honey gathering like the energy manifested by a swarm.** It is marvellous how soon a swarm builds up when hived. This being the case I encourage my skeps all I can for early swarms ; and swarms from Dutch skeps are generally large. These swarms I at once put into a frame hive, half combs and the rest foundation. In three weeks or so, I put **on the top** of this an ordinary brood, or shallow brood box, and when this is fairly filled I put the excluder and surplus box above. Always, when these are towards being filled, I put another on top.

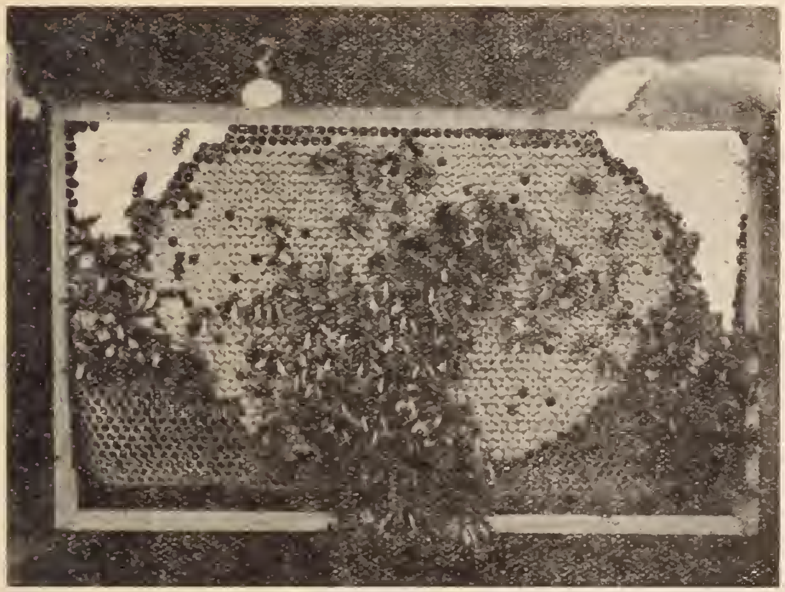


Fig. 64.—Frame of brood from a Dutch stock at the end of September. Note the compact mass of brood and pure white cappings of honey.

In the matter of brood nest, I never put the additions on **below** as one might do with Italians. I am often asked if it is correct practice to put a skep on the top of brood frames to allow the queen to breed down. No ! In nine cases out of ten the bees will swarm when the skep is crowded without doing any work on the brood combs in the bar hive.

Often these skeps will throw out a second swarm, or cast. If these casts are, say, of one pound weight, I put these into a skep or bar frame hive and they always build up to good stocks by the end of the season. If I do not want to increase so rapidly, I throw these small lots back into the skep it came from, the evening of the next day, and this generally settles matters.

With Dutch bees established in bar frame hives, I recommend "**doubling.**" This doubling being the utilisation of two boxes of full sized brood frames for the queen to breed in—always remembering to put the additional box on top, remembering also to do this at the right time, which is **in anticipation** of their needs.

The Wax Comb Foundation that Never Sags.

By M. G. DERVISHIAN, Nicosia, Cyprus.

Most beekeepers know that the best wax comb foundation made for the brood nest sags ; and if the frames are not wired, the comb breaks and falls down owing to the weight of brood and honey. In most cases the sagging and breakage occur during summer. It is always about an inch, or an inch and a half below the top bar of the frame. Bees instinctively know the object of comb foundation and it is with reluctance that they accept a defective specimen. The proof of this lies in the fact that when we give about two or three inches wide of comb foundation starter, the bees start building the comb at the lower edge of that foundation, and they abandon the upper part of the starter until they feel obliged to make use of it. They know the fault of the comb built on foundation which is not wired.

The wax comb foundation now-a-days manufactured and supplied to the bees is defective because it is not the nearest to the natural. Nobody can deny the advantages of the use of comb foundation. Nobody can deny that wiring of wax foundation is good to a certain degree to prevent excessive sagging and the breaking of the comb. But it is an unnatural remedy, and therefore bees do not like it, to say nothing of the expense and bother of wiring.

Authorities on apiculture should consider what is scientifically necessary to help the bees What is the use of the fuss and expense of wiring the frames and imbedding the wire into the foundation by electricity, etc., if a better procedure for entirely obviating this troublesome method of support can be evolved ? I do not wire my frames. The combs being extended to the side and bottom bars all round, they are more solid than the wired combs even for extracting purpose. I take a comb and cut it into strips of half inch width and I slip a strip between the comb and the bottom bar, also in the same way at the sides. Of course with a little trimming and with a little attention to place it in such a way that the cells look upwards and slanting, as with the rest of the comb, the bees will readily stick it all round.

It is admitted by authorities that a comb built on horizontally wired foundation, re-inforced even with six or seven vertical and two horizontal wires cross-wise to the comb, becomes very irregular. In other words, they mean that wiring does not perfectly save the comb from being uneven and defective. If instead of wire, wooden splints (stays) are used vertically, the bees gnaw out parts of the corresponding comb ; and the space occupied by the splints becomes useless for brood rearing. Further, the cells on the parts not gnawed, in the lines of the stays, are worthless, not having the full depth. Every observant apiarist knows that, during the honey flow, the new combs built by the bees are snow white in colour, and that this white wax is harder and much stronger than a similar thickness of the yellow wax, of which comb foundation is now being manufactured. I venture to submit therefore that the sagging of the comb built on yellow wax foundation is due to the softness of the wax, while the naturally built complete comb never sags. I regret to mention the open secret that most manufacturers of wax comb foundation are making use of sulphuric acid for the purpose of purifying the wax. I should think that the drawback to this process is that the acid by its chemical action on the stearine particles jeopardises the solidity of the wax. **Wax deprived of its stearine particles naturally becomes comparatively translucent when pressed between the rollers of the foundation machine, and is rendered softer than the wax which has not undergone treatment by sulphuric acid.**

I am well satisfied from close observation that the yellow colour of pure beeswax as rendered by the apiarist owes its softness to the amount of volatile acid oil which the bees by their breathing emit in the hive and the cocoons of the larvæ or pupæ absorb and communicate the same to the wax by degrees. In one or two years time the combs become more or less charged with the said acid, as also the inside of the walls of the hives become by degrees yellower and yellower until they become finally brown.

Everyone can observe for himself that a complete natural comb built by the bees (i.e., in the absence of wax foundation) does not sag. If so, why not manufacture comb foundation of pure beeswax which has **not** undergone sulphuric acid treatment and which has been harmlessly bleached ?

Can our manufacturers say that the expenses of bleaching are not 95% less than the expenses of wiring the frames ? Is it not a fact that the bees dislike even the slightest sagging or stretching ? Because the stretched part is useless for brood rearing, therefore bees fill it with honey, which they would not have done otherwise. And by having comparatively much honey stored in the brood nest, its brood-rearing capacity naturally diminishes—a condition which is bound to predispose to swarming. On the other hand, a comb built on **bleached** wax foundation does not lose its shape ; therefore the queen makes use of nearly all the cells (right up to the top bar) for brood rearing, and the honey is stored in the supers.

Should comb foundation of bleached wax be unobtainable, it is quite possible to make bees build their combs on guides and **ultimately** to far greater advantages (even taking into consideration the value of the honey or syrup sacrificed in wax building) and without the expense of comb foundation. I am giving this advice, of course, for the benefit of those who still prefer the wax comb to the metal comb and metal foundation. The bees can be hepled to rapidly build these complete natural combs by heavily feeding them with syrup, utilising young bees after the artificial swarming of the colony and giving the old swarmed bees a virgin queen. Under such conditions. even the latter will build worker comb only.

Graded Sections.

By GILBERT BARRATT.

ITEM OF QUEEN INTEREST.

In an admirable bulletin (No. 26,—1920), written by John Anderson, M A., B.Sc , and issued by the **North of Scotland College of Agriculture**, occur the following : " The fact that queens cannot be produced from larvæ more than three days old possibly indicates that something occurs on the fourth day—something that there is no going back upon. Perhaps it may be in the nature of a surgical operation." This recalls an experiment made by the writer in 1918, in pursuit of this question. Eggs were selected and placed in an incubating chamber, these were fed with royal jelly, slightly diluted with thin honey, to counteract evaporation. These eggs duly hatched, were further fed, and larvæ transferred to queen cells from which the virgins had emerged. They were further fed until disinclined to take further food. The cocoon was spun, and although, of course, the cells were unsealed, perfect queens emerged, thus showing, that space, food, and correct temperature and humidity only are needed in queen production.

NOSEMA IN HUMBLE AND HIVE BEES.

In the article on Nosema in Humble Bees, written by Miss Annie D. Betts, B.Sc., in the January BEE WORLD, the common Carder Bee (Bombus Agrorum), is found to be invariably infected with a species of Nosema, similar to that sometimes found in connection with a type of I.W.D. This raises the question whether any scheme depending on clearing an infected area would meet with a full measure of success, if these conditions obtained, and calls for further and immediate research work. The fact remains that Nosema may be present without the bees suffering from one or the other numerous types of the disease or group of diseases classified as " Isle of Wight." On reading the annotations on Drs. Fantham and Porter's work, in the October " BEE WORLD, one is forced to the conclusion that research work would proceed far more rapidly if equal attention were paid to the pathological side as to the bacteriological. It is fairly certain that individual bees do recover from **slight** attacks of Nosema disease ; this is clearly shown by lesions in the intestinal canal, just as lesions occur in the pleura after pleurisy for instance, and indeed no tissue can be affected without the indelible after-effect. This branch of research work would produce far quicker, and more valuable results than that of bacteriological study and culture alone. We do not possess at present definite knowledge on the pathological signs of **Nosema Disease** by which the latter may be diagnosed.

In the light of recent research work by Anderson and Rennie, Tinsley, and Goodrich, the report of Graham Smith and his colleagues, published seven years ago is confirmed and still commands the greatest appreciation, inasmuch as they forshadowed ; (1) that in comparison with Pasteur's work on **Pébrine** (the disease in the silk worm moth caused by **Nosema Bombycis**) apart from actual experiments, **Nosema apis** would be found to be the cause of a definite disease ; (2) that adult bees would probably be found to suffer from infectious diseases other than **microsporidiosis** ; and (3) that preventive rather than curative measures would have to be adopted to limit the ravages of disease.

The third point emphasises the immense importance, as preventive measures, of asepsis in the apiary, and the rearing and using of queens possessed of the highest vitality and disease-resisting qualities.

AIDS IN FRAME WIRING.

Recent articles in the Bee Press urge the necessity of placing the first wire much closer to the top bar, to eliminate the loss of brood rearing space, caused by distortion of the upper two inches of comb, by stretching. It is urged that all wires should be quite tight. In endeavouring to accomplish this, it is usually found that the wire cuts into the soft wood. This can be avoided by placing small wire staples close to the holes in the side bar, the tension of the wire will then be borne entirely by the staples. These can be quickly adjusted by a blow with a small hammer.

FARMING BEES.

Mr. Harwood's articles on this subject open up an interesting field for discussion and profitable application. Of course, one is bound to meet the inherent conservatism of the British farmer, but this only emphasises the value of such a national and an international federation as the **Apis Club**, as a medium for co-operative and educational work in this direction, as in many others.

If honey production in this country is to be lifted above its present level, and is to compete on equal terms with the flood of foreign honies, then it is obvious that something must be done on these lines. Most of the honies at present produced in this country are of too refined and high a quality, and insufficient in quantity, to compete with the lower grade foreign honies ; the alternative of taxing imported honey is bad economy, seeing that in this, and in all taxation of produce, the consumer **always** pays.

The production of **buckwheat honey**, as outlined by Mr. Harwood, is an ideal solution of this question, seeing that by using the **Dutch** buckwheat, in any but an **entirely** unfavourable season, a surplus is assured, and this at a time when our ordinary honey flows are over. Another great argument in favour of popularising buckwheat, is its use as a poultry food, and this, in face of the present boom, and the high price of eggs, would prove of inestimable value.

The nectar yield from buckwheat varies considerably, Pellett's **"American Honey Plants"** quotes the Ontario Association Crop Committee's report, that the average per colony production of more than ten thousand stocks, was 23 lbs., for two years in succession, and this under similar climatic conditions to our own. A further value is the ploughing in of buckwheat as a fertiliser, in conjunction with its value as fodder.

This increased production of a popular grade honey, of higher nutrient value than the staple clover, is of immense importance at the present time, and if, in conjunction with such an organisation as the **Apis Club** (the marketing section of which should be used as a co-operative medium for finding, maintaining and stabilising markets within the United Kingdom, and abroad if possible), producers will endeavour to popularise the taste for buckwheat honey, in preference to many of the concoctions of glucose, larvæ, dismembered bees, etc., so frequently found offered for sale, and indiscriminately accepted by the public, who, in fact, do **not** appreciate clover honey. The future of industrial apiculture in the United Kingdom would be vastly improved, and such a movement would tend to place it on a more favourable and substantial basis. Parenthetically, a fund might be formed for the free supply of buckwheat seed, to those willing to experiment in its production.

HIVING SWARMS.

It is very frequently found that a swarm will cluster in the heart of a thorn hedge, or other inaccessible place. The writer has been successful in **driving** such a swarm. This swarm had clustered on a stout stake in the middle of a thick hedge. Ordinary methods having failed, a body box fitted with frames of foundation was placed above the swarm, and a thick stake of wood held at right angles to that on which the swarm were clustered. This was then continually hammered with a thick piece of wood, and very quickly the swarm commenced to move upwards and were safely hived with a minimum of trouble and inconvenience.

[From " Yadil Clinical Notes."]

LOUIS PASTEUR.

(From the painting by Edelfelt).

[Pasteur's genius for research and observation was directed in June, 1865, to the silkworm disease in France. Up to that time he had never seen a silkworm, but at the insistence of a friend he consented to visit the Midi, and study the disease on the spot. Within three months he was able to announce results which gave hope of future immunity from this scourge. Chicken cholera was next investigated, and the application of the preventive measures suggested by Pasteur is claimed to have reduced the death-rate from 10 % to below 1 %. A similar reduction in the death-rate of cattle from anthrax is said to have followed the introduction of his method of immunisation, and Prof. Huxley declared it to be his opinion that the money value of these discoveries was sufficient to cover the whole of the war indemnity paid by France to Germany in 1870.—**Y.C.N.**]

THE METAL FOUNDATION.

I have had the opportunity early in April (at the Experimental Apiary of **The Apis Club**) of examining bees working on metal foundation. These were described as being under the most unfavourable conditions (for experimenting purposes) but they were to my mind under almost impossible conditions, just a handful of old bees in a one-frame nucleus. Nevertheless, combs were being built on both sides, eggs and larvæ were present, and pollen and syrup stored. Although the foundation was round-ridged, the bees were accurately following the base, and without the shadow of a doubt, with a larger force of bees, the whole comb would be quickly and fully built out. The most striking feature was the fact that the eggs were laid on the **bare metal**, thus proving its entire suitability, and a considerable saving in wax production. After a critical examination of this invention, every advantage of the wax foundation presented itself, price included, because of durability, whilst its many advantages over the wax article are self evident, and need no repetition. Its future should be well assured, and will without doubt, in the near future, be in universal demand.

DETECTING THE SOURCE OF HONEY.

I thoroughly enjoyed Mr. W. Herrod-Hempsall's admirable article on this subject in the November BEE WORLD. It is most informative within its small compass. Mr. W. Herrod-Hempsall deservedly stands as an authority on honey. At the same time I cannot understand why he should allow his fondness for clover honey to over-ride his professional status, which must be associated with accuracy. For instance, he refers to the density of buckwheat honey as poor. Density should obviously refer to **ripe** honey. Despite all variations, it is a fact that ripe buckwheat honey has an excellent density and is sometimes so thick, that it is difficult to extract. Nevertheless, I consider Mr. W. Herrod-Hempsall's contribution an excellent guide on its subject to all students of bee culture.

When Will the Honey Flow Begin ?

By ANNIE D. BETTS, B.Sc.

Success in beekeeping is largely a matter of doing the right thing at the right time. This is specially true with regard to getting the stocks strong for the honey harvest. It is therefore desirable to know within a few days when the flow will begin, so that breeding may be stimulated five to six weeks before that date. This knowledge can be obtained by keeping careful notes for several years, or by the use of a hive on scales ; but the former method is slow, and the latter is rather at the mercy of the weather, besides needing daily attention.

An alternative, which will in two years give a good idea of all the peculiarities of the local bee forage, is **the construction of a pollen chart.** Even when the nectar flow from a plant fails, it usually yields some pollen to the bees, so that its flowering season can be ascertained by this means even in an unfavourable year.

The requirements are :—A good-tempered stock ; a microscope magnifying up to 250 diam. ; some 3″ × 1″ glass slips, a "Tot sable" water-colour paint brush, some rags to wipe it, cover-glasses, etc., for subsequent examination of the pollen, and a note book (of plain white paper) for sketches and other notes. An eyepiece micrometer is very useful for measuring the pollen ; it consists of a disc of glass ruled with equi-distant lines, dropped into the eyepiece of the microscope.

The stock is best placed on as high a stand as is safe ; otherwise the observer has to sit on a stool about six inches high, which is conducive to stiffness in all but the very young. It is also well not to paint the alighting board dead white, for the sake of one's eyesight.

In March, when bees first begin carrying pollen freely, is the time to start operations, if possible. Go down to the hive every third or fourth day, at a time when many bees are working, sit so as to bring the face and hand close to the entrance, and capture samples of the various coloured pollens from the legs of home-coming bees with the moistened paint brush. This sounds difficult, but is in reality fairly easy. (For the encouragement of others, the writer may say that her " reaction-time " is shocking, and that she is blessed with most unfemininely clumsy fingers, yet generally succeeds in capturing the required samples without much trouble.) The specimens, as they are taken, are placed on a glass slip (one will hold 12 to 14 and is generally sufficient, except in June-August, when many different plants are being worked). The brush is then wiped, and the next sample watched for. The reason for choosing a quiet stock (apart from personal comfort) is that a few bees making vicious dabs at one's hands will soon knock many of the captured " loads " off the slip ; one would then be obliged to keep it covered—an annoyance and waste of time. It is moreover easier to see without a veil.

The samples are taken indoors and examined dry and in water ; they are identified by comparison with pollen direct from flowers. This is at first the most troublesome part of the business, and can only be surmounted by perseverance ; it is a good plan to sketch and measure the pollen of as many flowers as possible.

At the end of the year, procure a piece of " squared paper," say ⅛″ or $\frac{1}{10}$″ ; taking one or more days to a square (according to the size of chart desired), rule vertical lines for the months (see diagram), and indicate the period during which each kind of pollen is being carried in by a horizontal line. The time when a plant is the chief source of pollen may be shown by thickening the line. It is a good plan to make the lines similar in colour to the pollen-load from the flower concerned. The dates of beginning and end of pollen-yielding vary a little from year to year, but less than might be expected ; and the chart, once made, is a valuable guide to the local bee-flora. The nectar flow from a plant does not always correspond exactly to its pollen-yielding season in date, but as a rule the difference is unimportant, and can in any case be noted on the chart.

To those who wish to identify pollen brought home by bees, but have not time to examine a large number of flowers or to make drawings, I can recommend a study of the articles by Mr. G. Hayes in the **B.B.J.,** 1910 to 1915 inclusive, in which the pollen of all the important bee flowers is described and figured. It will always however be found best to check each identification by comparison with the pollen taken from the flower, at least until experience is gained.

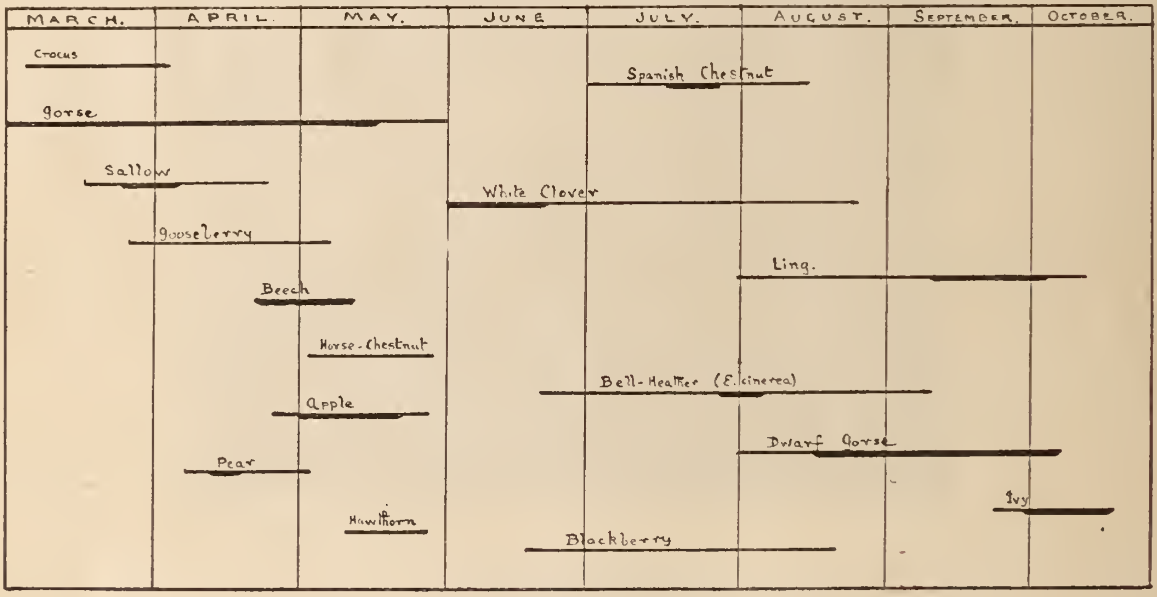


Fig. 65.—A Pollen Chart.

By W. S. TURNER.

It was a very downhearted little colony which was snugly tucked up in a small 3-framed hive. They had been so happy and industrious that very morning, for with a bright warm sun shining and a world all garlanded and strewn with flowers bearing luscious nectar, they had gone forth to gather those precious sweets which Nature gave them so freely, partly because of the innumerable tiny mouths which craved for food and which in turn would gather for others, and partly because of the black days they knew would come when, hugging each other for mutual warmth, they would have patiently to wait the coming of a much longed for spring.

All this enthusiasm had now vanished, for some dexterous hand had deftly taken them from their big, busy home and placed them in this tiny one—and now they were orphans.

After this complete upheaval, to which they had meekly submitted, their first thought was for their mother and each bee rushed about the new abode in search of her, only to confirm their loss.

It was disaster, just stupendous disaster, for this same deft hand had carefully chosen combs containing no eggs from which they could repair their loss and thus disconsolate and unhappy they just mooned around contemplating the irreparable.

A whole day passed and nothing happened, too overcome were they by their loss to forage, as they had done but a day before, for now they had no incentive.

But lo! that magic hand which had so cunningly whisked them from their home, now performed another feat, to them equally amazing. The quilt was lifted and replaced and on inspection it was found that a fine big queen cell had appeared between their combs and overjoyed they brooded it very devotedly, for here was their redemption. The effect of this on the colony was electric.

A day or two passed and after preparing the points of the cell the bees were gladdened to see the centre of their hopes gnawing her way out of her prison. After a little while when the cell was sufficiently open, out stepped a handsome princess, perhaps a little frail, but handsome nevertheless. Having escaped from her captivity she gazed out upon this teeming population with wondering eyes. Appetite then prompted her to sip from the surrounding wealth of food, nor did she forget those cupboards which were full of bread of various hues, for this was to help her to build up the splendid constitution she would need for the coming days of strain.

As time went by the princess was seized by a strange desire, and that to see what lay beyond the streak of light which marked the entrance to her home. Timidly she approached it, the fine warm air of a sunny day reaching her spiracles and tempted still further, she walked out to the alighting board. How strange it all seemed and yet she had a sense that this was all natural and quite as it should be, but being shy and nervous soon returned to the safety of her hive.

In a little while the memory of the first peep at the world—the world she was destined to see so little of—drew her once more to promenade the alighting board. This time a sudden tremor ran through her splendid body and lifting her wings wonderingly, she flew! What a delight this was and yet suddenly conscious of the danger of losing her home she turned her head towards it and flying in small circles learned all the marks of its exterior. This daring trip was repeated time and again, at least, so it seemed to her, till one day whilst standing on the board just ready for flight she " lightly turned her thoughts to love " and with that strange mixture of desire and fear she plunged into space and greatly daring, took sweeping circles in her great adventure boldly staking all on this one tremendous enterprise. Many lusty fellows, all full of ardour, living the line, that " faint heart never won fair lady " bounded after her, whilst heavenward she went ever luring them on—as is always the way with a maid—till the whole company disappeared.

Anxiety plainly marked her subjects at home, for they ran about the entrance to their castle, knowing in some vague way that here and now their destiny hung in the balance. The wait was not long, however, for after a few minutes of unendurable anxiety their princess returned, but now a queen, and henceforth they would ceaselessly minister to her every comfort.

To them the whole world had changed and whereas before everything was out of gear, now all were seized with a mad desire for labour. Their queen, willing servant in the path for which nature had designed her, would untiringly lay egg after egg, pearly white, and each one full of such amazing possibilities.

Gone is their apparent docility which was only blackest despair, for now each bee is a guard of the household, resenting all interference and ever ready to fix her bayonet and to use it. Listlessness has now given place to energy immeasurable, and during all the sunny hours one can see those tireless little feet, tripping in and out, each with a definite purpose, for their mutual well-being.

Some hasten home with great loads of beautiful pollen, significant of much toil and devotion. Others, to the uninitiated, would seem to have had a fruitless journey, but the trained eye can see that the distended body contains either nectar or water.

Nothing in this community is vague; all is definite.

Food, ventilation, scavenging, nursing, nothing comes amiss to these little " folk." Their motto seems to be " All for each and each for all."

What lessons they teach us if we would but learn.

Surely all our present unrest would disappear as if by magic if only we would watch such a story as this played out in the life and read, mark, learn and inwardly digest it.

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The Bee Community: A Single Organism.

By G. G. DESMOND.

About the last thing of which the contemplative beekeeper becomes conscious and yet one of the most important concepts from a practical as well as scientific point of view is that the bee community is a single organism. I don't mean merely that it is politically, socially and economically one, but that a hive of bees is biologically as much one indivisible body as a single cow, horse or sheep.

Ask an average student what a worker bee is and the answer you get is " an immature queen " or possibly " a neuter bee." It is no more wise to call the worker an immature or undeveloped queen than it is to call one of our fingers an undeveloped brain or, to get a closer analogy, to call a milk gland an undeveloped ovary. In one part of the bee-body, the queen, are the ovaries in another part, the worker, the milk-glands, the honey-sac and a dozen other maternal functions and in the drone the rest of a single hermaphrodite entity.

If the human body could be taken to pieces and the parts interchanged, as the parts of the bee-body can, some very strange human cripples might be the result. Think, for example, what a little man might be, fitted with the heart of a big man, or an otherwise old woman endowed with the ambitious blood of a young maid. None but a Maeterlinck could do justice to such tragedies. But how many serious beekeepers create catastrophies of nearly the same significance by dealing with their bees as though they were a sort of homogeneous liquid which, divided among a number of small pots, will soon fill as many big ones.

To save time and space, let us consider only the worker bees as cells of protoplasm in the bee-body. They are roughly divided into young bees and old bees. Imagine for a moment that as soon as a bee flies it performs indiscriminately the several operations of gathering water, pollen, nectar and propolis. It is of course not so, but imagine it. You must still face the fact that the young bees must probably be divided into as many as twenty-one classes, each administering to the needs of a grub of a certain pre-natal or post-natal age. For three days the young bee feeds the queen, for another three days she feeds royal jelly to the very young larvæ, then coarser food to the older grubs, then helps them to spin up, then broods them till they are ready to emerge and must besides make and work wax, fan the hive, clean out cells and the hive floor, shift stores and do many other things. We can interfere with none of these classes in whole or in part without causing a shock to the community rather like cutting off a finger from our own body, except that the bee finger will after a while grow again. In extreme cases, the damage is sometimes notorious. Few people, for example, would attempt to make an artificial swarm by removing from a stand all the brood and young bees and returning the queen to the custody of the flying bees. On the other hand quite a number have lost valuable queens by giving them to little lots weak in nurse bees. In such a case the bees get so desperate and irritated at the fecundity of the queen that they stop the bewildering flow of eggs by balling her.

Choose therefore from among methods of artificial swarming that one which best secures a proper proportion of young and old bees and brood between each of the parts.

Taking the whole number of the young bees as a royal jelly gland in the bee-body, it is obvious that as summer comes on this gland must become distended in excess of the needs of worker brood. The booty of the fields in the first place becomes richer in albumen in proportion to sugar. And as the queen cannot continually lay more eggs to-day than yesterday, the nurses, brimming with albumenous food, grow in numbers to exceed the grubs demanding it. They first find relief by raising drones which need more royal food than do the workers and lastly by instituting queen-cells, which can take still more of their superfluous "milk." This apparently leads, as Miss Betts has recently shewn, to swarming.

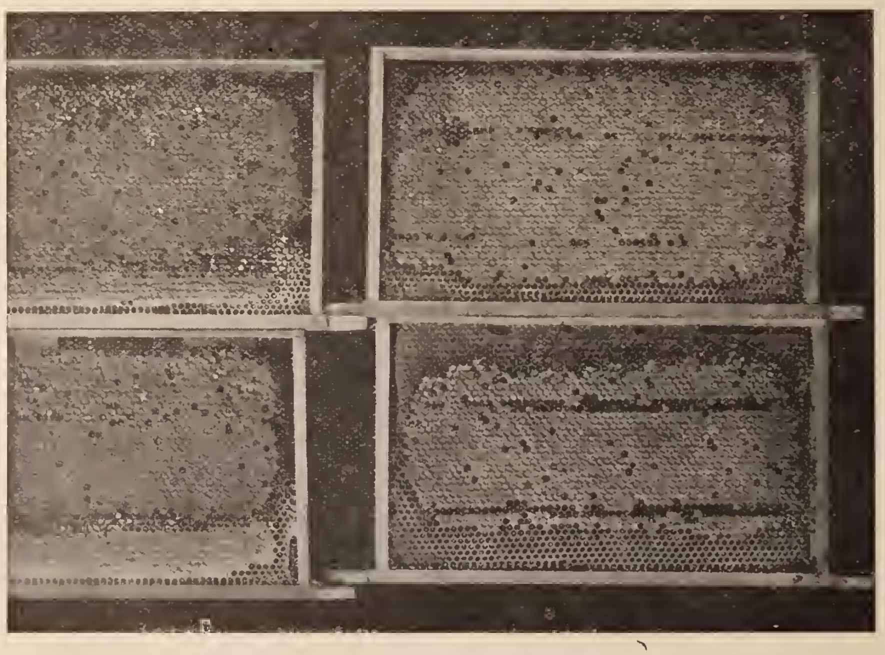

Fig. 66.—**The Compactness of Italian Brood.**

This photograph was taken in September, and shows how a good queen will make use of what income there is to ensure a strong force of bees—the only bees which will live long enough to rear successors in the early spring.

If this view of the bee-body is correct, we can, for example, promote swarming by adding to a hive frames of emerging brood, or by taking away unsealed brood and especially hatching eggs. Or we could retard swarming by adding frames of eggs or by taking away frames of young bees and emerging brood (giving of course some other comb in which the queen could go on laying). In either case we are crippling, or if you like monstering the bee-body. But while it is recovering from the operation we gain the object we aim at. The subject is a large one ; we could not overtake all its ramifications in less than a book ; but a grasp of its principles will often keep us right in our manipulations and our dealings with many bee problems.

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Italian Queens.

By A. ZANINI, General Manager of E. Bozzalla's Queen Rearing Apiaries.

The raising of queens gives the enthusiastic apiarist a peculiar pleasure, and no small amount of moral satisfaction. After all that has been said and written in connection with this beautiful and always delectable work, it would seem that perfection had almost been obtained ; whilst in reality there is a wide field for study and research, open still, and quite frequently even queen breeders of the widest experience are confronted with obscure problems in which there lie hidden mysteries that add to the many wonders in the life of this useful insect, the bee.

In this article I will not attempt anything further than recount some of my experiences, and give briefly my humble views on the systems of rearing and introduction of queen bees.

On the Rearing of Queens.—Of the many different methods of artificial queen rearing—by artificial, I mean every method except the natural swarming impulse on the part of the bees—the one described by Dr. E. F. Phillips, of the Ministry of Agriculture of the U.S.A., and the fruit of many years of patient study on the part of several American apiarists, I consider to be one of the best. Dr. Phillips' book has been translated into Italian by Dr. Vincenzo Asprea and great credit is due to the latter for the able manner in which he carried it out. The study of this little book was a great pleasure to me, and I did not lose time in putting the system to the test. At that time (1908) I was general manager of the **Società Lombarda d'Apicoltura**. I had of course to adapt myself to the size of my mating nuclei. Otherwise I followed the method described by Dr. Phillips to the letter and obtained excellent results. Notwithstanding my satisfaction I have not abandoned the system of having the queen cells built in strong colonies. This last method may now be considered antiquated by some, and it certainly costs the Queen Breeder about three times as much time as the former, but in almost every case the results are as near perfect as possible.

On the Colour of Queens.—What follows refers only to Italian Queens—**Apis Ligustica**—for my knowledge of other races is confined to what I have read in text books. Perhaps the most important variations in Italian Queens occur in colouring of the abdomen. This is usually of a golden yellow colour, but not always and there is a reason for this.

Very frequently beekeepers of other nations ask the Queen Rearer in Italy for golden queens, and not a few refuse leather coloured queens, asserting that the latter are not of pure stock. My opinion, based on a wide experience, is that they are of equal purity and value, the goldens and the leather queens, provided they have been equally well selected in breeding and have been tested. The golden queen is prettier to look at but that is her only advantage over her companion of darker shade.

Although a good deal has been done, and can still be done, by selection of parentage, both male and female, by far the greatest factor in determining the colour of the queen is the season in which the queen is reared. I have noted that **the largest queen cells are constructed during the main spring honey flow and yield the lightest coloured queens.** I am of opinion that the colour of the queen depends more on the food on which she was reared and that **the colour of the queen has no connection with the colour of the workers,** for there are golden queens which produce dark workers and dark queens which produce very light coloured workers.

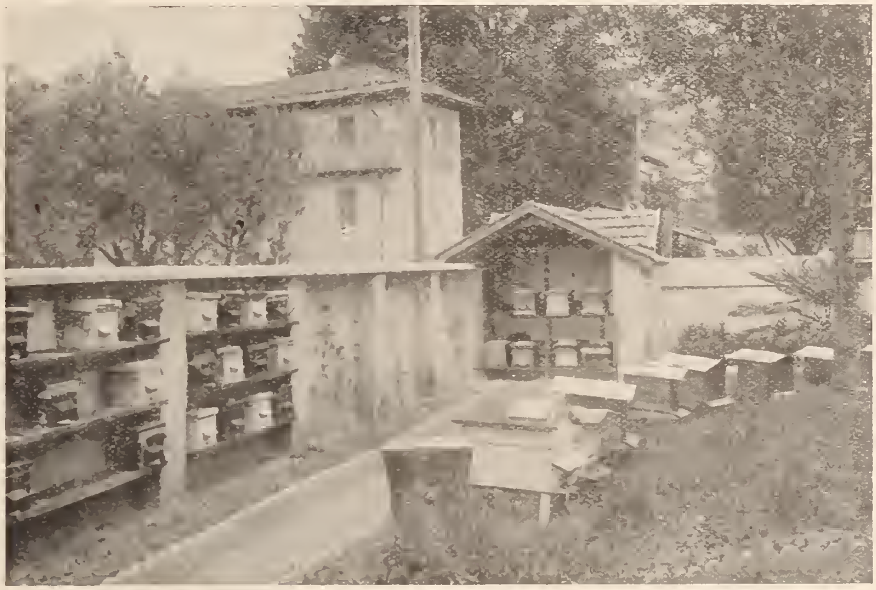

Fig. 67.—A corner of the Queen Rearing Apiary at Sostegno.

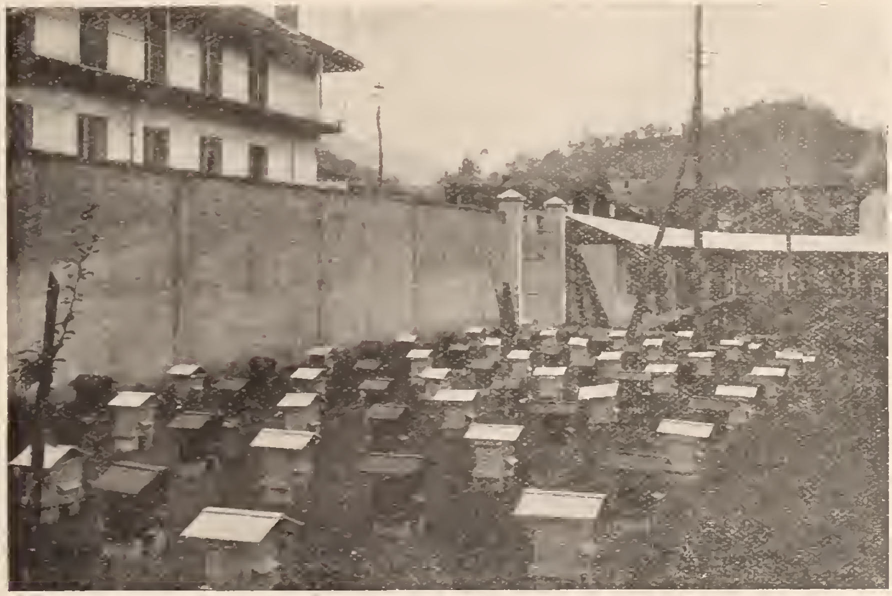

Fig. 68.—A portion of the Queen Rearing Apiary at Crevacuore.

Tested Queens.—A tested queen is one which does not leave the Breeder until he is satisfied with the compactness of her worker brood, her prolificness and with the bees which hatch out. I have never seen it stated that a fertile tested queen could be subject to periods of **defective ovipositing.** Yet from what I have had occasion to observe, I am convinced that such genital derangements are not uncommon.

I have noted several times that when the queens commenced laying, she placed from eight to ten eggs in each cell. These eggs never hatched and after two or three days the bees removed them. The cells were cleaned out by the bees and the queen again laid several eggs therein. Not one, but many such queens have I killed thinking they were useless. One such queen that behaved as above described was a real beauty, and instead of killing her I decided to keep her under observation. For several days I noticed nothing but seven or eight eggs per cell, and, as these did not hatch, I removed some of these eggs. Judge of my astonishment when I discovered upon examination that these eggs were only partially filled and had both ends shrivelled. I continued to watch this queen and was pleased and astonished to see after 20 days of degenerate egg laying, that she had started laying good eggs which hatched into fine larvæ, and as the latter developed and were sealed over by the bees the patches of brood became more and more compact and larger in area. In a very short time the four frames of the mating nucleus were full of brood whereupon the little colony was transferred to a hive containing 12 frames 27 × 27 cms. (10⅝" square) in which it developed, climbed up into supers, and gave a surplus from a fall flow.

What are the conclusions? I am of opinion that the defect is a **temporary** one; the after effects of the mating flight, and I believe that the queen has not complete control of the genital organs. I have noted often that a queen has for some time after mating been unable to close the vaginal orifice. It may on the other hand be due to weakness in the queen rendering her incapable of carrying the large number of eggs coming to maturity in the ovaries, and that the period of erratic and abnormal ovipositing is a period of convalescence. I have informed Sig. Asprea of these experiences in view of the translation in **L'Apicoltore** of Mr. H. Houston's letter to the **B.B.J.** on erratic ovipositing.

Another peculiar case, I came across only a few days ago in one of our out-apiaries. Last September I united, as is my custom on a large scale, nuclei in pairs, endeavouring to retain the best queens; those which had proved during the season to be the most compact layers. When I revisited this apiary in March I found one of these colonies with very little uncapped worker brood, still less young bees, an excessive amount of drone brood, capped and uncapped, and quite a number of young drones just hatched. The queen was a fine one and well developed. I turned to the record card—all our hives are so provided—and found the last note reading "27th September, 1919—Two nuclei united; fine queen with exceedingly compact masses of brood. Age of queen, 2 months." I frankly admit that I am at a loss for an explanation of this trick played on me by that beautiful queen. I am absolutely convinced that the queen was a good one last September. Why should a queen so young start an excessive amount of drone egg laying? I do not know. She is now under observation, and I shall be more than interested in seeing what developes, but I am afraid she won't recover.

Mating Nuclei.—Many are the opinions on the question of the size of nuclei for queen rearing apiaries. Some, among whom famous American Breeders, favour the baby nucleus, weak in bees, even as few as 500 of the latter. The motives are, convenience, cheap to form and ease of finding the queen. The advocates of baby nuclei advise the covering of the entrance with perforated zinc to prevent the nucleus decamping, but it is not always a deterrent. I do not think it is good practice to set up such small nuclei. The fact that the little colony often deserts is, or ought to be, an indication to the beekeeper that he is trying to do something contrary to Nature, and he ought to modify his methods in my opinion. In all questions raised in modern queen rearing, and for that matter in Apiculture in general, the more the natural instincts of the bee are kept to the fore the better will be the results the apiarist obtains.

In regard to the size of mating nuclei I do not wish you to think that I am advocating the other extreme. A full size hive is neither necessary nor advisable, and as you may like to know what I use, I will give the leading particulars of our nucleus hives which have been in use for many years.

The hives are constructed for four frames 10½" × 10½" (outside dimensions) with a population which varies between 9 and 12 oz. of bees. Some queen rearers will say that this is nothing but a waste of bees and material, but I hope to prove that it is justified.

Firstly, apart from the fact that never in my experience has such a nucleus ever abandoned its hive, a nucleus of this size is more than self supporting and I obtain at least one full frame of honey during the flowering of the Robinia (pseudo-acacia) weighing 4½ lbs. from each nucleus.

Secondly, I am convinced that the young queen acquires greater strength, is better developed and has her powers of reproduction increased when she is surrounded by respectable number of bees, than if compelled to pass her period of virginity and her early motherhood, both of which are periods of development, in a poor weak colony barely capable of doing more than exist with some help from outside.

Thirdly, a frame 10½" × 10½" is sufficiently large to enable bees to winter on. We keep a sufficient number of hives to take twelve of these frames, and in the autumn the nuclei are united in pairs under the better queen of the two and winter out of doors. The doubled nuclei not only winter safely, but they build up quickly of their own accord, so that by March they are well populated and in efficient condition. The queens are usually of August and September rearing, and when they are good ones the results in the early spring are really surprising.

Characteristics of Italian Bees.—The characteristics of the Italian Bee are fully described in the various text and hand books of Apiculture. I will confine myself to a few supplementary remarks.

Even the most experienced beekeepers sometimes run up against something inexplicable and new. It is just such experiences which keep up his enthusiasm for the craft.

I have noted several times that **not every colony can furnish bees suitable as queen attendants.** There are some bees (I am referring to Italians only) which cannot stand imprisonment. They fret, fidget and struggle and after the lapse of a few hours the older ones already begin to die off. There are others which remain quite peaceful and quiet when shut up in a cage. These bees make the best attendants for queens. Unfortunately it is impossible to distinguish the two types. Of course it is easy for the Queen Rearer to test his bees before using them as attendants and he naturally notes which colonies supply the best attendants. I have noted however that in the same colony there are sometimes both peaceful and nervous bees, speaking from the imprisonment point of view. Fortunately these cases are rare, but they do occasionally present themselves and then the Queen Breeder finds that some of his attendants do well during the journey, and some arrive dead, all taken from the same hive.

This is a point worthy of consideration in introducing queens. Just as bees vary in their attitude and deportment towards imprisonment, so do they differ in their attitude towards an alien queeen. Not all the methods of queen introduction are to be recommended. In view of the fact that queenless bees do not always behave the same, I do not think that the direct methods should be adopted by any except those who rear their own queens and can afford an occasional loss, although the loss of a really first class queen is heavy for everyone.

I would not advise those who buy their queens from Italy to adopt the direct methods. Messrs. Root's advice to allow the bees to release the queen by eating first through the card and then the candy in the Benton Cage is good. But the bees sometimes hurry up with this job, not however to release the queen, but to kill her. The best way is to place the caged queen in the centre of the cluster. Twenty-four hours later the cage should be removed, and if the bees covering the cage are making endeavours to shove their heads through the wire cloth, the queen should on no account be released. If on the other hand the bees covering the cage are mostly young bees and are humming peacefully, the queen may be released with every confidence. †

In conclusion I would say that it is in the interests of both the experienced and the inexperienced that the study of the bee is continuous. We have learned a great deal from our fathers; it is our duty to do more than pass this knowledge on to our children.

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A Forward Movement.

By C. P. JARMAN,

Editor, "Bee Craft."

There is room for all and more work to be done than there are workers to do. Difficulties are only raised to be knocked down, and opposition is a fine stimulus towards success. Distance frequently creates the appearance of difference, which vanishes on close inspection.

The absolute lack of co-operation among beekeepers, and their being split up into factions, does not arise from varied interests, for the interests of all are identical, but from a want of contact, of meeting and knowing each other. There is good, let us cling to this, in us all, which is quickly discovered when we rub shoulders.

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† See the remarks by Mr. H. Watts on this subject matter, p. 83.—Ed.

C. P. JARMAN, Esq.

It is a sad condemnation of the diplomacy exercised in the past, by the heads of Beekeeping organisations in this country that only recently has any successful effort been made towards co-ordination.

Mr. Judge at a **British Beekeepers' Association** Conference[*] outlined a scheme for bringing closer together the Beekeepers of the country; this scheme was a development of the system which has enabled the **Kent B.K.A.** to grow, slowly but surely. During the last few months some slight advance has been made along the lines indicated, but an organisation such as was then contemplated did not fill the gap which **The Apis Club** aims[†] at filling; and the more one considers the matter, the wider does the scope for opportunity present itself for **The Apis Club** and a **British Beekeepers' Association** embracing, and representative of, all the County Associations, to work side by side for the common good.

Those of us who have at heart the goodwill of beekeeping have a dual aim before us, or rather one goal which can be reached along two roads. We must strive, in our local interests, to develop our County Association and encourage County co-operation so that the **British Beekeepers' Association** is worthy of the name it bears, and in our wider interests we must support **The Apis Club** so that through it we meet, either actually at its headquarters, or in the spirit through THE BEE WORLD, those beekeepers who are far from us geographically, but whose influence will benefit us, as our influence, we hope, will help them.

It is a narrow and reactionary thought to imagine that there is not room in British Apiculture for all the organisations we have.

There is unquestionably room for all, and there is more work to be done than present prospects give hope of fulfilment. The future of apiculture depends upon our realisation of the necessity to encourage improvements and co-operation from every available source.

To be self satisfied, and to shut oneself up in a little corner, is to emulate the oyster or the ostrich.

The Langstroth Frame.

WHY NOT ADOPT IT AS A STANDARD IN THE UNITED KINGDOM?

By JULIAN E. LOCKWOOD.

Since the general adoption of the Italian Bee and other prolific races of Bees in this Country there is not the least doubt that the majority of British Beekeepers are more or less dissatisfied with the present Standard Frame now in use.

The hives mostly in use in this Country are made to take 10 of these British Standard Frames 14 × 8½ inches, though 11, 12 and 15-frame hives are to be seen occasionally. Everybody who has kept Italian bees are agreed that 10 British Standard Frames are quite inadequate to keep a young Italian queen supplied with sufficient room for ovipositing. Now the question arises that in the event of the standard frame being altered, which of the new frames are we to adopt?

I have seen advocated in the **B.B.J.**, the **B.K.G.** and THE BEE WORLD the Simmins Frame, 16 × 10 inches, and also the extension in depth of the present standard frame to 12 inches, making a frame 14 × 12 inches. There is much to be said in favour of both these frames, but personally I would much prefer the American Langstroth Frame, 17⅝ × 9⅛ inches. So far, I do not remember any beekeeper recommending this frame in the various letters appearing in the different Bee Papers, but as I am simply writing these notes hurriedly from memory without any data before me I may be wrong on this point. Of course the greatest difficulty we have to contend with in fixing a new standard is that we cannot please everybody and therefore it is not the least good attempting to do so. Nearly every beekeeper in the Country is at present (with few exceptions) using the British standard frame and consequently a large number of hives now in use will have to be scrapped. This point, however, will mostly apply to the single-walled hives, but **where the popular W.B.C. hives are in use, I suggest that they can be easily adapted to take the Langstroth frames with the addition of a new brood box.**

The Langstroth Frame is practically in use throughout the world and has well merited its adoption as the International Standard, and I would therefore very much like to see this frame adopted in the British Isles. There are several good points about the Langstroth frame worthy of recommendation and the length and depth are of suitable dimensions so that the bees will readily take to the supers. I am rather of opinion that if a deeper frame were standardised the majority of rather inexperienced beekeepers would find that instead of the bees storing honey in the supers a great deal of it would be stored in the frames above the brood and just where we do not want it. When experimenting with Langstroth frames in 1913-14, I found that the Italian Queens will pack every frame solid with brood and all the honey will be taken above and stored in the supers.

As regards wintering bees successfully, no better frame can be found. The Langstroth frame is eminently suitable, for the frames being longer than the British Standard the bees will cluster (as generally believed) at one end and gradually work towards the other end as the stores are consumed. I found these Langstroth frames infinitely superior to the British Standard frames for wintering.

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[*] THE BEE WORLD, June, 1919, p. 15.

[†] THE BEE WORLD, February, 1920, p. 179.

Another point that must not be overlooked is the fact that the Langstroth Frame with its thick top bar is easily manipulated with one hand by gripping the bar in the centre, thus leaving the other hand free for various other manipulations. In fact I found it a pleasure to work with, making the manipulation of the hive twice as easy as when working with our frames.

In my own Bee Farm at Hunstanton, Norfolk, I have standardised "Lee's Andover W.B.C. hives," which take 11 standard brood frames and 9 shallow frames in the supers with wide ends. Now I find that the Langstoth frame is easily adaptable to this type of hive and only another brood box is necessary to use the Langstroth frames in it. The outside measurements of the "Andover" style of hive is 22 × 19¼ inches, and as the thickness of the wood is half an inch, it easily allows for a brood box to take 10 Langstroth frames. I also find that the Langstroth frames can be used in other W.B.C. 10-frame hives with the necessary addition of a fresh brood box.

If Langstroth frames are used in a hive of the W.B.C. principle (and no better hive in my opinion can be used in this climate) the nine inch wood is quite suitable for hive making and with a sunk floorboard the brood box will only project a little above the outer case, which is not a great objection, and a few extra lifts will soon remedy this complaint.

To sum up: I claim the following points in favour of adopting the Langstroth Frame :—

1. Being practically an International Standard it can readily be obtained and is in use more or less the world over.
2. Its dimensions (17⅝″ × 9⅛″) are such that 10 or 12 of these frames will supply enough space for the most prolific queens without the least desire on the part of the bees to swarm and thereby spoil the honey crop.
3. Bees will readily take to the supers with these frames in use and store honey therein, whereas with a deeper frame a considerable quantity of honey would be stored above the brood in these deep frames instead of being stored in the supers.
4. It is an admirable frame for bees to winter on and the bees can consume the stores without any undue disturbance of the winter cluster.
5. The Langstroth Frame with its thick top bar is easily and pleasantly manipulated and with much greater comfort than the frames now in use in the British Isles.

I have no wish to force my brother beekeepers to adopt the Lanstroth frame against their will or to pick out faults in the 16″ × 10″ or the 14″ × 12″ frames, but I do suggest that before a final change is made in our Standard Frame full consideration should be given to the Langstroth Frame which has been praised the world over and has given such general satisfaction in America and our Colonies.

Were it not for the fact that the demand for stocks and nuclei in this Country has been practically limited to those on the British Standard, I should have not the slightest hesitation in adopting the Langstroth frame throughout my Bee Farm. I have already a number of Aluminium Langstroth Combs on their way from America and directly they arrive I intend to give this frame a still larger trial.

Slings and Arrows.

By A. F. HARWOOD.

The Conference on the subject of Legislation against bee diseases has been held; the draft Bill submitted to it has been expounded and has, apparently, been accepted as the basis on which the superstructure of departmental orders that is to end the sea of troubles that threatens to wash away the beekeeping industry in this country.

As, however, nothing has yet come up for the consideration of the Witenagemot at Westminster, it may be deemed not entirely out of place to submit a few reflections on the subject.

It is to be regretted that, in view of the peculiar method of convening the Conference, the short notice given and the supreme importance of the decision to be taken, more latitude was not given in laying down the lines which discussion should follow.

The more freely such debate were allowed to range over the field covered by the Bill, the clearer would emerge the points of view of individual critics and, if the proposal were sound, the more easily would their doubts and fears be dispelled.

The generosity of Mr. Lamb was evidently not shared by many of those present, the unmannerly interruptions on the one hand, and the sycophantic attitude on the other, were a ghastly revelation of the need for education in the elements of decency and the cultivation of a spirit of virile independence among the ruck of beemen.

Personally, as one strongly convinced of the need for legislative action, and believing that the opposition to be encountered rested chiefly upon misconceptions of the scope and spirit of the measure to be introduced, it was a humiliation to be associated, however remotely, with such an exhibition of intolerance and unjustifiable short-circuiting of any opposition.

On the other hand, the showing made by some of those critics who were given an opportunity of speaking was very feeble. The courage apparently lacking at the Conference was re-infused at the tea-table pow-wows which followed, and, omitting the personalities which vitiated and largely discounted the attitude therein disclosed, the following are some of the more legitimate points raised.

(1) The short notice given, together with the omission to supply beforehand copies of the draft measure, precluded that preparatory study of the text so needful if the discussion were to be informed and helpful.

(2) The Conference, while not "packed" in the most objectionable sense of the word, was yet not properly representative of beekeeping opinions, as the invitations to attend were not extended, —as they should have been—to all **bona-fide** beekeepers.

(3) In view of the notorious slowness of progress of Bills towards their ultimate fate, no harm—good, rather—would have resulted from a postponement to a later date or the adjournment of the Conference to enable those concerned to study adequately the provisions of the measure and it was most unfortunate that Mr. Barratt was prevented by the narrow and rigid ruling of the chair, from suggesting that 'rush' was to be deprecated, that adequate facilities had not been given and that, in consequence, the majority decision of that meeting could not be taken as a reasoned and final sanction.

(4) Judging by the analogy of invitations to the Conference, many of those most intimately affected by the Orders to be issued would not be included in any "consultations" which it was proposed to hold before their enforcement was decided upon.

(5) The question of compensation was left so vague as to excite alarm.

The attitude, highly pontifical, of certain amateurs who airily dismiss the suggestion that stocks destroyed should be paid for, was strongly criticised, chiefly on the demonstrable ground that stocks showing obvious symptoms of disease may and do, nevertheless, yield a large surplus in the current season and therefore have, commercially, a distinct and considerable value.

(6) Regret was expressed that Mr. Bartlett's reiterated request for information as to the legislative action taken in other countries was not responded to. The data this supplied might have been very helpful.

(7) The question was raised of the possibility of interference with private study and experiment involving the possession for treatment of diseased colonies.

With proper organisation, a fair hearing and absence of pusillanimity and stage fright on the part of would-be speakers, many of these matters could have been discussed and settled.

As it was, the meeting had to endure a gratuitous homily from one clerical gentleman, while a commercial beekeeper—one of the very few present—Mr. Allbon, was deprived of a chance to put cogent arguments and elicit important facts.

Is it too late, even now, to have a new Conference to deal with the draft Bill, make recommendations, post M.P's and form a Standing Committee to watch the interests of the Craft, intervening in what ever way may be deemed most efficacious to safeguard the renascent industry.

The Culture of Buckwheat.

By A. F. HARWOOD.

I am indebted to Mynheer van Langeveld, of Haarlem, for the following interesting particulars of buckwheat culture in Holland. The information applies equally to its cultivation here.

"Buckwheat plants require loose but not too poor sandy soil for their growth. They will also thrive in sulphureous soil but do not do well in heavy clay. They do not exhaust the soil, so can be sown very well in a field afterwards used for rye. It is of great importance to sow buckwheat every fortnight after the month of May, so that the latest crops can be reaped if the earliest ones have been destroyed by frost. If it touches the plant when it has just come up, it may still do well, but if almost or quite in flower, the frost will destroy the crop and the field can be ploughed.

A buckwheat field should be ploughed twice and the seed strewn in the second furrow, rather more thickly in poor soil than in rich and thickest when one wishes to use buckwheat as fodder. The plant is generally in flower in the middle of July, and is then frequented by numerous bees. The harvest usually begins in the middle of August. One cannot wait till all the seeds are ripe, for in this case the best grains would get lost.

When buckwheat has been reaped and the weather is dry, it should be transported soon or thrashed, as it easily drops its grains.

Buckwheat is a great blessing for moorland, sandy regions or marshy land. The honey obtained from this plant is particularly palatable. As to the price, it tallies with that of heather honey. (It should be noted that buckwheat is only used for honey before noon)."

The foregoing well-written notes are quite in accord with what I already knew of the subject. Ploughed in buckwheat is an admirable fertiliser and in the rare event of frost damage this course pays well in the following crop. Cutting should be done in the early morning, before the dew is off, this obviates much of the "spilling."

Nectar is exuded between 9 a.m. and high noon, rarely after.

As a crop for really poor soil there is nothing to compare with it in the smallness of its demands and the greatness of its yield.

When buckwheat is grown primarily for the bees, successive sowings, at fortnightly intervals, are advisable, as not only does this course prolong the flowering period, but obviates the uncertainty of nectar yield sometimes caused by weather variations, a spell of cloudy weather checking the secretion. In Holland and Brittany broad casting and furrow planting are generally practised; in America broadcasting and drilling, a foot between rows, are the most usual methods. For those who wish to have the latest and fullest information on the subject of buckwheat culture, I recommend the study of the article "Buckwheat" in the **American Cyclopaedia of Agriculture,** but for practical purposes the following condensation of U.S. and Canadian practice may be taken as sufficient, those parts adapted to our climate and seasons only being given.

Preference may well be given to English saved seed, with Dutch and Breton stocks for experiment.

A loose condition of the soil is requisite, such as is most easily obtainable on high lying heath and moorlands or on newly broken up pasture or clover.

Buckwheat fills best on soils retentive of moisture without being heavy.

Thorough harrowing after ploughing should precede the drilling and the quantity required is from two to three pecks per acre, the better the land, the smaller the amount of seed used.

Superphosphates and gypsum in equal proportions, 1 cwt. per acre, is a good dressing to be drilled in with the seed.

Buckwheat may be followed by wheat or oats, leaving the ground in good heart and condition.

As a green manure, it is quite equal to mustard or rape with the advantage that it need not be ploughed in until the flowering is over, so that the nectar is available.

Buckwheat is a very quick grower, occupying the ground only about two months and yields nectar for quite half that time.

The practice of sowing trifolium incarnatum with buckwheat has much to recommend it. The fallen buckwheat leaf helps the crimson clover to thicken up.

For cleaning ground of weeds, buckwheat is as effective as potatoes and leaves the soil in an even more mellow condition while naturally not exhausted and requiring further heavy manuring as would be the case after potatoes.

The two points on which there appears to be no difference of opinion are first, that a fine tilth is essential at sowing time, and that the ground should be well consolidated with the roller, preferably of the disc type, and second, that while buckwheat can be successfully grown even on heavy clay land, provided sowing be done during a dry spell, it will not thrive on soil that is liable to be waterlogged or is naturally wet and badly drained.

As to **the uses of buckwheat,** I have already referred to the delicious pancakes made from its flour and need only add that for the poultry keeper there is no grain to equal it, while the dairy farmer will find that the straw makes an excellent litter in cowshed and pigsty, while in mixture with ground oats and maize meal, buckwheat flour is a splendid feed for all stock, milch cows, horses and pigs.

Breeding sows will bring their litters along fast on a feed of buckwheat and ground oats without the maize meal, which is rather too heating.

In conclusion I think it is safe to say that **there is no crop, commonly grown in this country, that cannot follow buckwheat with advantage to the yield and economy in the tillage and manuring of the soil.**

As an alternative to the fertilisers already mentioned, basic slag and Kainit—or a substitute for the latter—may be used in the same quantities and proportions, the benefit showing, not only in the increased yield of both grain and straw, but also in the succeeding crop be this what it may, since basic slag is about the most lasting in effect of any known fertiliser.

Some Aspects of Intensive Brood Production in the Autumn.

By ARTHUR M. STURGES, B.Sc.

Vice-President, Cheshire B.K.A.

From observations made, during the past winter and the present spring, it has been definitely shewn, that the most successful wintering has resulted with those stocks which contained the largest proportion of young bees, produced by intensive breeding in September.

It has also been observed that certain stocks have built up in the spring with extreme rapidity. On looking into the history of these stocks it is found that they were composed entirely of bees hatched after August 1st—a very large percentage of which were hatched in September. These stocks are headed by queens hatched from July 21st to August 5th. The queens are of two distinct strains.

A detailed case may be given of one of these stocks—A nucleus was made up of 1 frame of sealed brood well covered with bees, with one comb of food, and two empty combs. A frame of drones was shaken into the nucleus, which was given a virgin queen, just hatched, when the nucleus was made up on July 21st. This nucleus was taken to the mating apiary, and the queen commenced to lay on July 28th. The sealed brood originally given hatched out between July 28th and August 1st. The queen was a first cross raised from a pure Italian crossed with an English drone. The drones used for mating were pure Italians of another strain.

As soon as this queen commenced to lay, heavy stimulating feeding was given, by means of a brood box feeder.

Frames of old drawn out comb were given as required, and on September 18th, the stock covered seven frames, and had then four solid sheets of sealed brood. Very heavy feeding was then commenced to fill up all available space in the hive and to stop the production of brood.

Combs of sealed stores were given and the stock put up for winter on October 12th on 6 frames. At this time brood was practically absent in the hive.

In the early spring this stock was very active, foraging on every available opportunity, and slow stimulative feeding was commenced early in March, frames of old comb being given as required. The queen appeared to commence operations as though the honey flow were in full swing, **not merely laying eggs in a portion of the comb, but laying right up to the food arches.**

On April 17th this stock is covering 10 standard frames, brood in 8 frames, of which 6 are sealed or approaching that stage.

At this date, drones were flying, and five small queen cells were cut out, containing larvæ and royal jelly. This stock, which consisted of 1 comb of bees and brood on July 21st is ready for the supers for apple honey on April 21st. It will be worked up, after this, to 10 frames 14″ × 14″ for the main honey flow in June.

This may be an exceptional case, but there are two others very nearly approaching it. Details of these cannot be given as they were transferred to 14″ × 14″ frames early in April.

Building up these small stocks is usually a slow process at this season of the year, and these exceptionally good results can only be attributed to the large percentage of young bees present.

When the matter is looked into carefully, the reason is apparently obvious. The slow building up as usually found, is due to the small number of nurse bees present in the early spring, and serious breeding does not commence, in the usual cases, until the first small batches of eggs laid by the queen have hatched out.

This is due to the fact that the food for the brood, and for the queen, **is** produced by young bees, and if the statements made by many observers are correct, **can** only be produced in any quantity by these bees.

The glands discovered by Meckel in 1846 (see **"The Honey Bee,"** 2nd edition, p. 115, Cowan) are very large. in young bees, and in older workers, very shrunken Schiemenz (see page 120 of the same work) states that these glands are used in preparing the food for brood and queen feeding. He points out that they are largest and most active in young worker bees.

These views are also held by Vogel, Hilbert and Dzierzon.

Langstroth-Dadant's **"The Hive and Honey Bee"** (20th edition, paragraph 39) states that "these glands are very large and dilated in young worker, while they act as nurses, but are slim in the bees of a broodless colony. In the old bees they wither more and more till they become shrunken and seemingly dried."

From these abstracts it would appear most probable that the older bees are practically incapable of producing in any large quantity the digested food (Bee milk) necessary for the brood production required for rapid increase in early spring, and that for this rapid increase a strong force of late autumn hatched bees is necessary.

Certainly in the case given as an example these views appear to be confirmed.

The Cause of Co-operation and Research.

By F. M. CLARIDGE.

Member of the Re-Stocking Committee, Essex B.K.A.

With the inauguration of **The Apis Club,** and the appearance of its official organ, THE BEE WORLD, we were promised something out of the ordinary, in an effort to elevate the Craft to a more intelligent plane than that to which it has drifted during the prevalance of that scourge known to the generality of beekeepers as the "Isle of Wight Disease."

The task which the pioneers of the new movement set themselves, being Herculean in its magnitude, might well have daunted the most optimistic. Whether they have attained any measure of success, I leave it to the members of **The Apis Club** to decide. The high standard of literature appearing in the columns of THE BEE WORLD will quickly prove to the most casual observer that broad minded apiarists certainly consider the movement well worthy of their support, and the articles in the January number for instance should make all but the most sluggish minds "sit up and take notice." The maintenance of this high standard, together with the ever increasing membership of the **Club**, certainly gives no small amount of encouragement to our overburdened Editor, but it is to be hoped that all members will do their very utmost to increase still further the membership and popularise the movement, by obtaining through education and enlightenment as many new members as they possibly can.

"Union is strength" is an oft-quoted maxim, but that union is useless unless it has the brain behind it, directing its energies in the right channels. To this end, the expansion of the **Club** on co-operative lines, getting its foundations firmly fixed on a solid business basis, is a vital necessity, and a foregone conclusion. Members attending the Annual Conference on May 29th, will have the opportunity of hearing and discussing the proposed policy and constitution of the **Club,** and it is sincerely hoped that all who possibly can attend will do so. Nay, every member should consider it his or her duty to attend, either in person or by proxy.

Among other tasks which it is hoped the **Club** will be able to undertake in the near future, is that of instituting the co-operative working of all honey producers, helping to secure a sure and stable market, including the grading and correct packing of all produce, with equable prices for produce of the same grades. To secure the results desired, it is necessary that all members shall work most wholeheartedly, sinking all individual differences, emulating their willing little servants who have only the "good of the community" to guide their actions.

While we are thinking of the commercial development of the Craft, we must not overlook the educational work so urgently needed, and the development of **The Apis Club Experimental Apiary** must not suffer from lack of either material or funds.

Individual Effort and Co-operation in Beekeeping.

By J. B. LAMB,

Chairman, Middlesex B.K.A.

We learnt as children that in life it is impossible to remain stationary; that everyone must either make progress or fall back. Experience has shewn us that the old saying is quite true, and that athletes, musicians, vocalists, scientists, teachers,—in fact, men and women in general must constantly be working with the view of making further progress if they do not wish to lag behind in the race of life, and beekeepers are certainly no exception to the rule.

From time to time one is inclined to ask whether beekeeping in its practical and scientific aspects is making such progress as is commensurate with its importance as a rural industry. If it is not doing so the reason is surely because many beekeepers overlook the fact that their own individual efforts, insignificant though they may appear to be, can result in conferring a benefit on the beekeeping industry generally.

It is a question whether the rank and file of beekeepers do really observe, test, and experiment as much as they would do if they were really enthusiasts, and in any case it is practically certain that the majority fail to record their observations, tests and experiments for future reference. Yet such notes ought to be fully recorded if they are to serve a useful purpose in the future, owing to the fact that the average memory cannot be relied upon.

J. B. LAMB, Esq.

Let those who are reading this article ask themselves how many of the following questions they could answer without reference to the writings of others :—

(a) What is the approximate temperature of a brood chamber containing its full complement of combs and bees about the beginning of May, and to what temperature would it be likely to rise just before the issue of a swarm ?

(b) When combs are being rendered in order to secure the wax, at what temperature do the globules of wax begin to rise to the surface of the water ?

(c) How many worker cells approximately are there in a comb of standard size ?

(d) What evidence can be produced to shew that a vigorous queen can lay 3,000 eggs a day just before swarming time ?

(e) What is the highest temperature that the finger will bear when placed in hot water ?

(f) What is the maximum temperature which syrup should be allowed to reach when making bee candy ?

Now all these queries can be answered by beekeepers without much difficulty, but it would not be surprising to find that many readers have not thought of testing these simple matters for themselves. Yet there are very many other ways in which facts connected with beekeeping can be observed and entered in a register for future reference, such as particulars regarding the late and early fertilization of queens ; the various methods of uniting bees ; the amount of stores consumed during the winter ; the best ways to introduce queens ; the value of various antiseptics in the treatment of bee diseases ; the amount of surplus honey stored by different races of bees, and their value in regard to early and late working ; the amount of honey consumed by a swarm or by driven bees prior to being hived, thus accounting for loss of weight, and so forth.

A point to be remembered is that all such facts should at once be entered in a register kept in a more or less classified form, with the dates on which the observations were made, so that in the course of years a useful series of facts would be available for purposes of comparison.

Furthermore, there are unfortunately some persons who are a little disinclined to adopt new methods of beekeeping and recently-invented appliances, because they are satisfied with those to which they have been used for many years ; but it must not be forgotten that experience can devise new and better methods, and that almost every beekeeping appliance can in some way or other be improved upon.

The latest invention in the beekeeping industry, and one that may prove to be exceedingly important—though this is not at all certain, is the metal comb and the metal foundation, the value of which very few beekeepers in this country have as yet been able to test. Certain disadvantages immediately occur to one, but it would be wise to consider these inventions with an unbiassed mind, and to make adequate tests, in order that a sound judgment as to their value may be formed.

Individual effort and willing co-operation are two important factors if more than an average degree of success is to attend any industry. If beekeepers will but realize this fact, and endeavour to visualize the potentialities of their industry, they will give such an impetus to beekeeping that the deplorable fact mentioned by Dr. Keeble at the recent conference of beekeepers, will no longer obtain, namely, that about three times as much honey is imported as is produced at home.

Beekeeping in Norway.

By the Rev. JOHN BEVERIDGE, B.D., M.B.E.

Norway has always been noted for honey, in spite of its long and severe winter from a beekeeping point of view. The references to bees and honey and mead in the Saga literature are numerous, and many place names testify to the abundance of bees and honey both in ancient and modern times.

The **Norwgian Beekeepers' Union** has had a long and varied history ; and although it has done wonders to improve the standard of beekeeping in the country, it has formidable obstacles yet to overcome before the industry is placed on a thoroughly satisfactory footing. Its official organ—**Tidskrift For Biskjötsel**—is in its 36th year and reaches all the members of the Union. It is an interesting, instructive and up-to-date monthly, well-edited by one who understands his task. The Union has some 70 branches, and it enjoys a grant of nearly £500 from the government and national sources, its own other income being about £200. It has a membership of upwards of 2,500, which means 1 for every 1000 of the population ; and probably few countries have such a proportion of the citizens so interested in beekeeping as to be active members of the national beekeeping association. For instance, such a proportion would mean over 40,000 members for England. The **Scottish Beekeepers' Association** has hardly more members than Norway, although its population is more than twice as great.

As in other lands, certain parts of the country are more adapted for profitable beekeeping than others, and it is in the south and east that the majority of beekeepers are found ; but of course in the orchard districts and oases of Norway the industry specially flourishes, and the average surplus may be anything from 50 to 100 pounds or more. From fruit trees, wild berries, clover and ling, the most of the honey is derived, and the beemen who have more than two of these sources of income are specially favoured. It seems to be acknowledged that Italians or crosses either neglect the heather or prefer other sources of nectar when they are concurrent ; for they do not compare favourably with the brown bee as heather honey gatherers, although they are better than the browns for many other honey plants.

The Union carries on its work pretty much as other National Associations do. Qualified experts visit the various districts in rotation, giving such practical instruction as may be necessary, with local demonstrations. Courses of lectures are given at the agricultural schools, and at special centres. Propaganda and other lectures are a feature of the winter work. Special courses on the symptoms and cure of diseases have been held with gratifying results. Part of the government grant has been specially ear-marked for combating the common diseases. The "Isle of Wight" disease has not been so destructive in Norway as in this country; but both European and American Foul-brood, and Sac-brood are widely spread as well as some other less common diseases. In many districts, by careful instruction, unceasing vigilance, absolute cleanliness, and immediate attention when suspicious symptoms appear, the industry has been placed on a proper basis. But the careless beekeeper with straw skeps and box hives is the great obstacle to progress and a cleaner health bill; and proposals are being made for a Bill relating to Bees and Beekeeping, with a clause providing for the destruction of all hives except serviceable movable comb hives, of suitable material and in a good state of preservation. Any other receptacle can only be allowed temporarily, until, as at swarming time, a standard hive can be got.

Application is also being made to the government for a grant of £150 for a queen-rearing station; but some want two such stations, one for the rearing of Italian queens in the East and one for Brown queens in the South.

In a future article some attention may be directed to interesting features of the industry peculiar to Norway; but sufficient has been said to-day to show that the **Norwegian Beekeepers' Union** and its magazine are doing their bestf or the industry in the Land of the Midnight Sun.

The Functions of Nectaries.

By ANNIE D. BETTS, B.Sc.

It is generally stated (see THE BEE WORLD, p. 187) that flowers secrete nectar in order to attract insects and thereby to ensure cross-fertilisation. No doubt this function of nectaries is an important one; but there are, as I hope to show, strong reasons for suspecting that it is not their primary purpose. That nectaries are of use to plants in some other way is suggested by the existence of "extra-floral" nectaries on stems and leaf-stalks of many plants which do not, in Europe at any rate, serve the purpose of defence by attracting ants to the plant.

My readers are doubtless familiar with the physical process known as "osmosis"; whereby, when two fluids—say, pure water and sugar solution—are separated by a permeable membrane, each diffuses into the other, but at different rates, till the composition of the fluid is identical on both sides of the membrane. They are also probably aware that it is by this process that plants take up water and food materials out of the soil; and it is at least partly by this means that fluids, and substances in solution therein, pass from one plant-cell to another. It is moreover well known that withdrawal of moisture from a body often causes a change of shape and consequent movement; a familiar example is the weather indicator in which two small figures go in or out according to the amount of moisture in the air, owing to the contortions of a piece of catgut. Such withdrawal of moisture may be due to evaporation in dry air, or to the osmotic activity of neighbouring fluid. Water is for example, sucked into sugar solution through a membrane, to a very considerable extent.

If we take pollen from almost any plant and place it in water under the microscope, it will swell up and finally burst, or at least become so disorganised as to be incapable of germination. It is plainly of importance to plants to keep their pollen dry. Some accomplish this by a downward inclination of the flower, or by remaining closed until opened by an insect's visit. Foxglove and Broom are respectively examples. The anthers of these flowers can dehisce (open) in any weather, however wet; as may be proved by placing the young buds in a tightly-closed glass vessel partly filled with water, so that they are in a completely saturated atmosphere. In most flowers that are so placed as to have the anthers exposed to wet, these do not dehisce in a saturated atmosphere (Apple, Sallow, various Buttercups, and Spanish Chestnut are examples). The pollen is therefore safe from damage by rain. There are exceptions to these rules, but in the majority of flowers I examined when testing M. Burck's hypothesis, they hold good. [*]

Now suppose that after some hours' rain the weather improves. It is plain that the flower that gets its pollen exposed soonest will be likely to become the parent of more offspring than those flowers that expose their pollen more slowly. At the same time the mechanism must be such as will only act in dry (or drying) weather. This, there is reason to think, is achieved by the nectaries. The nectary tissue secretes sugary substances, and the water is drawn out of the neighbouring tissues (including those of the anthers) by osmosis. The anthers then dehisce by hygroscopic action, in a manner similar to the movements of catgut; and the pollen is exposed for removal by insects. The longer this action continues, the more dilute will the nectary-sap become, and the more turgid the cells containing it. Finally the cells can no longer contain so much fluid, and it is discharged on to the surface of the nectary as "nectar." Now the more this free nectar is removed by insects, the higher will the concentration of sugar in the nectary be likely to be, and therefore osmosis and hygroscopic action will go on the more actively. Nectar is thus, in this theory, a waste product; rather than expenditure upon advertisement, as the textbooks would have us believe. If we ask: Which came first, the flower or the bee? there is, in fact, considerable ground for replying: The flower. (Naturally, this does not contradict the obvious fact that flowers, **as we know them,** are largely the product of mutual adaptation between flower and insect). Additional evidence for this view is provided by the facts relating to extra-floral nectaries,[†] such as those on the stems of various species of **Polygonum.** These act as safety-valves to prevent too great an accumulation of water in young growing stems.

It is only fair to add that some botanists deny that the above is the true explanation of the action of nectaries, maintaining that the anthers only open when the sun shines on them and warms them, thus causing them to part with water.[‡] The subject is one which merits more study, particularly as it has considerable bearing on the conditions favourable to nectar-secretion, and on the way in which these differ for different plants.

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[*] W. Burck: "De l'influence des Nectaires sur la Déhiscence des Anthères." **Revue Générale de Botanique,** 1907, p. 104.

[†] E. J. Salisbury: "The Extra-floral Nectaries of the Genus Polygonum." **Annals of Botany,** 1909, p. 239.

[‡] E. Hannig: "Uber den Oeffnungsmechanismus des Antheren." Pringsheim's **Jahrbuch f. wiss. Bot.,** Vol. 47, Part 2, 1910, p. 186-218.

The Value of Fresh Air to the Honey Bee.

By the Rev. WILLIAM H. RICHARDSON.

While "pure" air is one of the greatest boons, "bad" air is one of the worst enemies to the bee community. And just as this essential of health is ignored with disastrous consequences in human life, even so in relation to the most interesting and industrious creatures of the insect world. Millions of self-forgetful and self-sacrificing toilers are spoiled of successful achievement by insufficient ventilation. Up and down the country, not only with the clumsy and careless or ill-informed of our craft, but with many who love their bees and make a real attempt to house them—well, pure air is at a discount. I have sometimes wondered how the bees could live at all. The fact they do is evidence that granted reasonable conditions their hardiness and energy would ensure surprising results.

Health.—Not only is pure air an important factor in the **prevention of disease,** but likewise in relation to its cure. This is especially true in the cases of I.W.D., common dysentery and foul brood. Though still on the "sunny side" of 40, the writer has kept bees for over 30 years during which he has only had two cases of foul brood and one of dysentery. And though for some time his apiary was located within 50 yards of one almost wiped out with I.W.D., none of his bees suffered from our modern scourge. This record is without the use of preventive medicines or disinfectants, except during the last two seasons.

For many years I have been in touch with large numbers of beekeepers in different parts of the country and some in Scotland. I have discovered and treated hundred of cases of disease and almost everywhere the denizens of the old skep and the modern frame hive were begging for pure air. In my own case there may have been very good fortune, but I am convinced that a yearly renewal of queens (preferably Italians of vigorous strains), thorough spring and autumn cleaning, dry hives with ample space between the brood box and outer walls, and **abundance of pure air** is the way to health and success.

Honey Production.—Healthy bees are indispensable to a big harvest of nectar. Whatever destroys "vim" bars the way to the storage of surplus. In a factory with defective ventilation, lassitude and incapacity will appear in spite of the best intentions and the most stubborn wills of honest workmen.

Have we any right to expect better results from a bee community ? But outside the question of unfitness for the task is another. The breaking up of armies of foragers is too often consequent not so much on the limitations of space as on the condition of the atmosphere. It is true that swarms will issue from some stocks under almost every conceivable circumstance. But to increase the inflow of pure air is a marvellous deterrent. As a result of improved ventilation, I have known the swarming sentiment disappear from many stocks when preparations have been advanced and queen cells almost ripe. Indeed during the whole of my experience I have only been troubled with three undesired swarms. Good fortune again ! Well, it may be. Young queens and other factors may have played their part but failure and disappointment would have kept company with surcharged air. Bees breathe as truly as human beings, and equally resent a sense of stifling. If their language were better understood, beekeepers would often hear the cry," Let's be out. It's too oppressive !" Then the tumult and the rush to the open spaces ! Then the annoyance caused by the sight of half-filled supers and possibly aggravated by the loss of a gigantic force capable of securing handsome returns to their owner !

How may this important factor—" pure air "—be guaranteed ?—(1) By large entrances. Even in winter, an entrance of six inches is not excessive for any stock worth keeping. A much wider entrance, however, is preferable for heavy stocks. With great populations when the sun is high and activity at its maximum, the whole width of the hive and an inch or more in depth is not an extravagant inlet or outlet for bees or air. (2) By discarding all but porous material for quilts. This is a bigger concern than many realise. American cloth and similar substances stand condemned. And what of quilting with layer upon layer of propolis recalling incidents in the days of long ago ? Washing soda and soap with the aid of a dolly-tub would cleanse these bee wrappings and incidentally provide a little physical culture for the apiarist. Glass covers in the place of first quilts may have advantages and interest, but these should be so adapted as to allow a steady passage of air through suitable material at the edges.

Of course times are when the wide entrance exposes the stock to marauding wasps and visiting bees of questionable morals. What then ? The answer is the air supply must be equally assured in the day of conflict as in the times of peace. Now is the time for an ingenious use of perforated zinc. It can be cut and fitted to provide a vantage ground for defence and a deadly pass for the enemy. In addition to this, the quilts may be slightly turned back at the front of the hive and a slip of perforated zinc laid across the frame ends. These emergency appliances should vanish on the re-establishment of peace.

One word more requires to be said. We need to guard our bees at all seasons from exposure to draughts. Not only will bees reject supers, but a swarm will sometimes refuse to settle in the home provided because of unpleasant air currents which threaten its well-being. What we need to learn too often is that a draught does not essentially consist of pure air. It may be very much otherwise. And if we are to get the best out of our bees, we must remember they not only need good air, but they love comfort.

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Revolution ?

By THOS. F. COBB.

One of the most noticeable results of the great war has been the rapid development of this spirit of revolution and change which is at present sweeping over every country in the world. It is therefore only in keeping with the spirit of the times, if this article is devoted to a consideration of whether revolution might not be desirable in our present beekeeping methods, or whether those methods are perfectly satisfactory as they are and everything in the garden delightfully lovely.

It is not my intention to present the reader with any particular cut and dried system, rather I hope to present certain aspects of the subject in such a form that he will more clearly realise their truth and importance, and will then be in a better position to formulate his own system in accordance with the needs of the moment.

Most text books treat of the subject of uniting, contracting brood nests, etc., prior to the honey flow, but judging from the usual practice, the average beekeeper has only dimly understood the vastly different aim that should be before him as soon as the flow commences, and the one that guided and prompted his manipulations during the spring. Let us try to analyse this difference and throw it up into sharper relief.

How many of us, for instance, are able to recognize the large brood nest we have been at such pains to develop during spring, as the greatest drawback we have to contend with during the gathering of surplus honey. Yet this is so, and theoretically the hive of greatest honey-gathering efficiency would be one with no brood nest at all. Unfortunately bees will not work without a certain amount of brood present, so therefore the utmost practical efficiency is obtained by arranging a hive with the smallest brood nest that will still keep the bees working, and the largest possible force of flying bees. A specific instance will perhaps illustrate this.

In an average normal colony, which we will suppose is collecting 4 lbs. per day and yet is not storing honey, practically the whole of what is being gathered is taken to supply the brood. It is indeed doubtful whether the flying bees consume honey at all, except on rare and special occasions, but depend upon extracting what little sustenance they require, during the procees of collecting the raw nectar from the flowers. In any case, the amount flying bees require is so small we will neglect it, and consider the brood takes the whole 4 lbs. and also, that the brood nest is as large as the queen can keep it. If now the flow increases to 6 lbs. per day, we get 4 lbs. taken for brood and 2 lbs. stored, and if the flow lasts twenty days your take will be 40 lbs., from two hives 80 lbs.

But suppose now, instead of working each hive repeatedly, we unite both forces of flying bees in one hive, removing the second brood chamber to a new position, and only gather our surplus from the one hive. We now get a force capable of gathering 12 lbs. per day, of which 4 lbs. is required for brood, while 8 lbs. is stored, or in other words a take of 160 lbs. for the season instead of merely 80 lbs.

There is, however, no reason whatever why this increase of output should be confined to two hives, three may be united into one with just as much ease, and right here is where I want the reader to exercise that power of imagination that too frequently lies dormant in most of us. Why should not the whole apiary be converted into an efficient honey-gathering machine, in favour of the present system, which amounts to little more than the supering of each hive as it becomes strong enough ?

Of course it sounds an impossible suggestion, but it ? Turn to "Odds and Ends Concerning Bees" in the December BEE WORLD and read again of the doings of Hannemann. One hundred and twenty lbs. or 600,000 bees in one hive 14 queens, barrels of bees and giant hives; does it not raise visions of possibilities in beekeeping hitherto undreamt of ? No, not even after a day extracting.

It is possible that many readers, although struck with the originality of Hannemann's system, yet regarded that originality, as of the same type that evolved a steam engine with a square flywheel. If so, I believe they are making a big mistake ; on closer examination it will be seen that the principles involved are entirely in accord with the principles laid down above for the composition of the most efficient honey-gathering hive. Admitted, the actual carrying-out of those principles may be crude, but then one must remember that the hive equipment available was nothing like the standard we know to-day.

Hannemann's ideas were sound, generations in advance of his time. With the discoveries that have been made since, both in knowledge and appliances, the time is now ripe for a re-consideration of the principles he worked on. Here is a huge field for voyage and discovery. Experiment has as yet scarcely touched the borders of it. A veritable Land of Promise for some lover of Nature, the gates of which will only be opened to Youth, Audacity and Imagination.

A suggestion of what I mean. Imagine nine hives arranged as three sides of a square, bees flying outwards, as closely placed as possible, each hives of two stories with separate entrances, one above the other, containing a queen in each chamber, the bees either separated or mixing indiscriminately. We now have eighteen colonies of flying bees returning home to one spot. The prospects of an immediate flow looks promising and all hives are removed to a fresh position. In the centre of the square is placed a special honey-gathering hive, a demobilized sentry box converted to peaceful use, by having the inside fitted with supers, on the drawer principle as in the Conqueror hive. An entrance must be made on three sides and a door fitted to the back. The lowest chamber will contain several queens divided with excluder, bees mixing freely. Would it work? If they did, would it be an advantage over our present methods? Would they swarm? Think it out, that's why I wrote this article.

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Apis and Flora

In My Garden Now.

By A. F. HARWOOD.

It is surely axiomatic that no one unendowed with a keen faculty of observation can hope to become a successful beekeeper.

This faculty must be constantly exercised in many directions if we are to keep thoroughly up to our highest level of efficiency.

There is no aspect of the craft that is more important than that which gives on the flowers which supply nectar and/or pollen. Often the harvest of a season has been lost through inobservance of the right time to super, and this time can only be fixed by noting well what forage plants are available.

At no season of the year are we entirely without flowers of use to bees. The period from Christmas to end of January sees the blooming of laurustinus, a most useful shrub, winter aconite, and hellebore. **H. niger** is well-known and appreciated, but there is another species, **H. atrorubens** syn. **H. viridis** to which I would draw attention. The flowers, smaller than those of **H. niger** are green, with maroon markings which, starting from the base of the petals, move to the edge. Each flower has five nectaries brimming with sweetness, and the curious colouring and character of this subject, which is quite hardy and perfectly easy to cultivate, or better, let alone, make it very interesting as a shady place denizen.

From the beginning of February crocus and snowdrop take up the tale and now, in March, the snowdrift of plum and pear blossom in the orchard shows against a foreground of red and yellow flowering currants, **Ribes sanguinea** and **R. aurea,** the former more free in flowering and less trouble as regards suckers.

At the foot of these again spring the glory of the snow, **Chionodoxa luciliae** and **scilla sibirica** with the grape hyacinths, **muscari,** about to follow. Before them lies a carpet of **Aubrietia,** and a broad patch of **arabis alpina** looks as though March winds had carried thither a flurry of the plum blossom. Beneath these plum trees, there is a broad quarter of wallflowers, grown for cutting. The crimson ones are now a mass of bloom, the yellows only just breaking.

Along the hedge bank wild strawberries are being searched by an early-abroad bumble bee, while as I breast the rise to the railway bridge, I see before me the golden blooms of the gorse that covers the slopes.

On the allotments beyond, unwanted brassicae are coming into flower and all around the churchyard are almonds, pyrus and persica in full bloom, succeeding the creamy-white **prunus pissardii** with its purple foliage.

Month by month note might be taken of subjects desirable for our gardens, and these be acquired in time for the next season.

With the exception of a few, favorites of various members of my family, all the flowering plants in my own garden are of distinct value to the bees, many found useless having been discarded in spite of their beauty, since all can be well replaced by others, no whit inferior in charm, aiding and comforting our little allies.

The Press Mirror.

The British Bee Journal.

Conference of Beekeepers re Legislation.

We are enabled by the permission of the Ministry of Agriculture to publish the report of the above as follows:—

Report of proceedings of a conference, convened by the Ministry of Agriculture and Fisheries, of beekeepers and Associations interested on the subject of proposed legislation for the control of bee diseases, held on Friday, February 6, 1920, at 3 p.m., at the Survevors, Institution, Great George Street, Westminster, London, S.W.

PRESENT AT MEETING OF BEEKEEPERS, ETC., TO DISCUSS BEE DISEASES BILL, AT SURVEYORS' INSTITUTION—FRIDAY, FEBRUARY 6, 1920:—

Edwd. Hodson; Jas. Hill, Hertford and Ware B.K.A.; G. S. Peren, M. of A.; A. Whiting, M. of A.; R. Hedger Wallace, Glamorganshire A. Ed. C.; C. D. Thompson, Glamorganshire A. Ed. C.; H. Harmer, Durham B.K.A.; Edgar T. Gardiner, Durham B.K.A.; Austin Keen, Cambridgeshire A. Ed. C.; Major S. G. Cook, Huntingdonshire A. Ed. C.; Wynn Thomas, Ministry of A. and F.; W. E. Richardson, Yorkshire B.K.A. and A. Ed. Council; J. Geo. Bothamley, Lincolnshire (Kesteven) A. Ed. C.; E. C. R. Holloway, Cambridgeshire B.K.A.; G. E. Rogers, Cambridgeshire B.K.A.; Geo. Hayes, Notts. B.K.A.; C. Taborn, Notts. A. Ed. C.; T. W. White, Walthamstow; Norris S. Toms, Herts. B.K.A.; P. E. Wagstaff, Herts. B.K.A.; A. H. Cobbett, M. of A.; Miss G. M. Hay, Bucks. B.K.A.; J. Pearman, Derby B.K.A.; A. Briers, Leicester B.K.A.; H. M. Riley, Leicester B.K.A.; H. E. Warren, Eastbourne B.K.A.; W. S. Gornall, Eastbourne B.K.A.; G. W. Bullamore, School of Agriculture, Cambs.; T. W. Cockeram, Wilts. Bee Expert and A. Ed. C.; G. S. Bedford, Berks. A. Ed. C.; A. D. Woodley, Berks. A. Ed. C.; E. C. Middleton, South Staffs. B.K.A.; Alfred Dewey, Kent B.K.A.; Geo. W. Judge, Kent B.K.A.; L. E. Snelgrove, Somerset B.K.A.; L. Bigg-Wither, Somerset B.K.A.; Dr. T. Turner O'Callaghan, Wembley B.K.A.; W. Broadhurst, Wembley B.K.A.; P. C. H. Jay, Sutton; Arthur F. Hardy, Hants. and I. of Wight B.K.A.; L. Illingworth, Hants. and I. of Wight B.K.A.; E. Ff. Ball, Bucks. B.K.A.; J. A. Hebbes, Bedfordshire A. Ed. C.; W. Wallace, Bedfordshire A. Ed. C.; Major H. F. B. Archer, Suffolk B.K.A.; W. J. Walton, S. Staffs. B.K.A.; W. A. Stewart, Northaupton A. Ed. C.; G. H. Garrod, Kent A. Ed. C.; Mrs. Edward Fielding, Chairman Hortl. Committee, Shropshire County Council; T. P. P. MacPhail, Hortl. and Bee Instructor, Dorset A. Ed. C.; Rev. G. E. H. Pratt, Expert and Lecturer, Salop County Council, A. Ed. C.; J. W. Stephens, Herefordshire B.K.A.; J. Arnfield, Herefordshire B.K.A.; Thomas W. Cowan, Chairman of the British B.K.A.; J. B. Lamb, Chairman Middlesex B.K.A.; W. J. Pearce, Chesham B.K.A.; H. F. Swann, Hon. Sec. Northamptonshire B.K.A.; A. F. Harwood, Middlesex B.K.A. and Bee Committee; George Bryden, B.B.K.A.; J. Herrod-Hempsall, Junior Editor BRITISH BEE JOURNAL and BEEKEEPERS' RECORD; John Rennie, Aberdeen; H. E. Scrope Viner, Worcestershire B.K.A.; J. H. Jones, M. of A.; Samuel Leedham, Worcestershire B.K.A. and Sec. Bee Committee; J. H. Roper, Lincs (Kesteven) A. Ed. C.; F. W. Dowdey, M. of A.; Rev. H. Morgan, Lecturer on Bees, Aberystwyth College of Agriculture, and Pembroke A. Ed. C.; James Ritchie, Fleet B.K.A.; Robert Lee, Uxbridge B.K.A.; G. R. Alder, Essex B.K.A.; F. M. Claridge, Essex B.K.A.; J. Steel, Cumberland and Westmorland B.K.A.; G. Chatham, Cumberland and Westmorland B.K.A.; Joseph Price, Stafford County Council Bee Expert and A. Ed. C.; W. Griffiths, Staffs. B.K.A.; A. G. Burgess, Sec. of Surrey Bee Restocking Committee; A. D. Turner, Hortl. Supt. Somerset; John Rowlands, Madryn Farm School Bee Instructor for Carnarvonshire; Rev. R. Dixon Box, Chairman Twickenham and Thames Valley B.K.A.; Miss Byatt, Hon. Sec. Twickenham and Thames Valley B.K.A.; Jas. Allbon, Hitchin; C. B. Bartlett, Oxford B.K.A. and A. Ed. C.; R. T. Cuthbert, Oxford B.K.A.; Gauntlett Thomas, Gloucester B.K.A.; John Silver, Croydon; F. Kenwood, Sec. Sussex B.K.A.; C. H. Woodford, B.K. Sec. to Hunts. C. Council; F. W Frusher, Lincolnshire B.K.A.; James N. Bold, Lancs. B.K.A.; Frederick H. Taylor, Lancs. B.K.A.; Fred. Richardson, Ely, Cambs.; G. Barratt, Sheffield B.K.A.; G. R. Peart, Sheffield B.K.A.; J. E. Pinder, Chairman Salisbury Bee Assn., Member of Wilts. County Bee Committee; Mrs. J. E. Pinder, Salisbury B.K.A.; W. Herrod-Hempsall, M. of A.; Archibald Seth-Smith, Surrey B.K.A.; Walter Reid, Vice-Chairman B.B.K.A.; Thos. Cox, Norfolk, A. Ed. C.; C. J. Gleed, Hants A. Ed. C.; A. Willmott, Hertford and Ware District B.K.A.; G. H. Hollingworth, Gloucestershire A. Ed. C.; W. E. Hamlin, Surrey B.K.A.; G. J. Flasbman, Middlesex Ed. C.

Professor Frederick Keeble M.A., D.Sc., C.B.E., F.R.S., occupied the chair, and, opening the meeting, said:—Ladies and Gentlemen,—Both the Minister and Sir Arthur Griffith-Boscawen are deeply interested in the subject which has called us together this afternoon, and I can remember very well the active interest which Lord Lee took in the question of bees when, during the war, we had under consideration a scheme which was subsequently adopted for the introduction of bees of better behaviour with respect to disease than those which are native to this country. He was enthusiastically in favour of the scheme, and it was largely due to his energy that we were able, as a Government Department, to put it into action with a reasonable amount of celerity.

Our main business this afternoon is to confer constructively on the subject of proposed legislation. I take it that we shall keep that object in the forefront of our minds ; we shall not allow this important Conference to spend time in discussing details or in offering criticisms, which in proper time and place may very well be offered, against one another or against absent ones. I take it that we shall devote our attention to an instructive consideration of the question of legislation and the form which that legislation should take.

But before we proceed to that business, I feel it my duty to trace in broad outline the ultimate reasons we are brought together here now. I think it will serve a useful purpose, and it may remove some misconception. It was not infrequently my experience, when I had the privilege of being an officer in the Ministry of Agriculture, to find that men—not necessarily beekeepers, but men engaged in one industry or another—were under a very active impression that the chief occupation of the officers of the Ministry who were concerned with that industry was to interfere with their liberties or with the conduct of their business. It may be, gentlemen, that that impression lingers still in the minds of some ; but I can assure you that, were it the case with the Ministry, there would be no reason for calling this Conference this afternoon. The exact opposite is the case, because what has been done with respect to a good many other industries may, I feel certain, be done with respect to yours. With respect to the fruit-growing industry and the market-gardening industry and others, we have this understanding : That it is with the growers themselves who are interested in introducing and in fashioning any control of one another which may be expedient. We do not take the view that it is the business of a Government Department to descend from the height of its position to impose restrictions on others, and therefore we do not start out with the intention of introducing legislation of this kind or another; but when the men concerned with that industry recognise that, for their own protection, it is necessary to have some ordered control, then it is our business to endeavour to introduce that control and to ensure that it shall be used, but with English justice, that it shall be rigorously and impartially applied. So that, if we have legislation, we must all agree that whatever penalties attach to it those penalties will be, and must be, enforced, because I am sure I am not alone in thinking that that Government which first of all imposes penalties, and then does not enforce them, is not worthy of the respect of the citizens. (Cheers.)

We have then to assume that it is not a case of two opposing parties of representatives of a Department and representatives of an industry meeting here to-day, but rather a group of people all of whom are interested in securing, if possible, an extension of this small but very important industry. We are all agreed that the present state of this industry leaves very much to be desired, and it is an extraordinary thing that, although beekeepers as a class, thanks largely to their power of co-operation with one another—which does not always preclude disagreement with one another—have, I venture to say, a very high standard of skill, they have found their skill baffled and their bees destroyed by a series of acts of God which have taken the form of sundry pestilences. As a consequence of the recurrence of diseases to which various names have been given—more names than certain cures— the bee stocks of the country have been seriously depleted.

In the happy days before the War nobody had any statistics about anything, and therefore it is not possible to say exactly how many beekeepers there were before the War, and exactly how many were lost during the War or gave up the work during the War. But, by a lucky circumstance, we were asked to undertake the alms-giving of sugar, and we used that opportunity—I hope we shall have your assent to that course—as a means of getting some statistics with regard to beekeepers. The figures which we obtained—I daresay they are common knowledge to you ; of course, they are by no means complete, because Englishmen generally object to giving you information about anything—but the figures we obtained as to the number of people who really wanted sugar, and who, we ascertained, really had stocks of bees up to December, 1919, was a little over 18,000, and the number of stocks which they possessed was, with respect to movable comb hives, some 64,000 ; in skeps, boxes and other receptacles, which we will have something to say about later on—there were some 14,000, making a total of something like 78,000 stocks of bees in that year.

How big a decline there has been it is impossible to say, but it is within the knowledge of many experts here that that decline during the last four years has been great and rapid. For example, a year or two ago—in 1916—the Essex beekeepers made a census, a repetition of a previous census, and they were able to show that, in place of some 2,629 stocks kept by members of their Association in the year 1908, that number of upwards of two and a half thousand had dwindled to a paltry 205 in the latter year, 1916 ; there had been a fall of 90 per cent., and in other countries, Middlesex, for instance, a similar fall is known to have occurred. I do not suggest for one moment that the fall throughout the country has been aynthing like so great ; in fact, will not suggest what it has been. We may take the present figures as somewhere about 78,000, and leave it to those with more knowledge than I have to suggest whether the decline has been of the order of 20 per cent., or 50 per cent., or so great as it has been in certain localities. It does not greatly matter now to say how great that decline has been, except to show us how much we have to do to make good.

We know that there is plenty of room for more bees in this country. You would have to walk, on the average, in England along a line or over an area of about three acres of a fruit plantation before you would see a single hive, were all the 78,000 stocks kept in fruit plantations and orchards. That is to say, if we take the total area of this country under fruit, leaving out the small gardens and ground under one acre, then we find, speaking in averages, there is one hive or stock for every three acres of plantation of fruit trees. There is plenty of room for more.

I do not propose to go into the question of the value of bees as fertilising agents at the present moment. I think probably a good deal of exaggeration has found its way into the Press on that subject, for how otherwise should we account for the extraordinarily bountiful harvest of last year ? But I think the truth probably lies in this—that hive bees do play a very valuable part in the pollination of fruit trees, and that part is most marked in seasons when fruit is most wanted. In years of great plenty, when all the conditions are favourable, and all the insect life of the earth comes tumbling out and searching for pollen, the hive bee may not be so important, but in those years when the conditions are uncertain, it is pretty certain—and investigations in America confirm it—that the hive bee does play an important part, by effecting fertilisation, in supplying us with fruit.

But apart from that accessory advantage, we know that we want the honey. We know that sugar is scarce—or, rather dear, and therefore scarce. (Laughter.) We know that the imports of honey reached the extraordinarily high figure of £2,750,000 in 1918. Of course, money has depreciated, but even so it is a very large amount to import. If we try to make a computation of the amount of honey produced at home as compared with the amount imported, I think we shall find we can estimate the value of the honey produced at home at something between £500,000 and £1,000,000. I asked Mr. Herrod-Hempsall, whose expert knowledge on these subjects is unrivalled, to give me an estimate, but I have also myself some experience in dealing with averages, and I know that averages can be made to prove anything. Therefore I prefer to be very cautious, and so I say that the probable value of the home crop of honey lies between £500,000 and £1,000,000. Let us say that about three times as much is imported as is produced at home. I should think that is probably somewhere near the truth. It is rather a pity when you think that for every four pots of honey that are eaten, three of them have been raised by foreign bees on foreign soil, and the money which has gone to pay for them has also gone to the people who live on the foreign soil. There is, then, good ground for first realising that we have had a bad setback in this business, and secondly in realising that there is a good opening if only we can recover the lost ground.

We now come to the more difficult question—that is, the question of the cause of this loss of ground. Everybody is aware nowadays—nobody knows anything with certainty, but many people are quite certain that the chief cause is " Isle of Wight " disease. Not many people are quite certain what the " Isle of Wight " disease is. Each new researcher—I will not say gives it a new name, but is apt to rather under-rate the conclusions reached by his predecessor. A little while ago we were quite sure it was due to the bacillus (*sic*) Nosema apis ; now we are not quite certain that it is. But, after all, gentlemen, that is a matter for these research people ; we know that, whatever the cause, the bees die. The problem then becomes a two-fold one. In the first place, we want more investigation. (Hear, hear.) The practical men and the scientific men—if one can use those two terms, which ought to be synonymous, but which are usually taken to be in opposition to one another—the practical men and the scientific men must co-operate in the research.

The Ministry has done what it can. It has founded a Research Institute; it has encouraged work at Cambridge and at Oxford; there are practical beekeepers associated with that work, and we have hopes that in the course of time good results will follow. But anybody who thinks that research work produces results quickly knows nothing about it. I have been engaged on such a work all my life, and although I cannot claim to be a conspicuous ornament thereof, I have sufficient experience to know that no good research work is ever done quickly; it is slow work. Therefore, we cannot wait while these gentlemen in laboratories spend their years over their mocroscopes finding out some remedy for this or that disease; we have to get on in the meantime in more rough-and-ready ways.

There are two ways, I think, by which we can get it. There is the way which has been followed in the past, but which, I think, can be followed with more assiduity, and that is by seeing that ignorance is dissipated. There are many people who keep bees who ought not to. (Hear, hear.) They do not know how to keep them; in fact, they are so ignorant that they do not know anything about the first principles of cleanliness. (Hear, hear). Those people must, by some means or other, be encouraged to be clean, not in their own interests, but in the interests of their neighbours, because there is nothing so contagious as dirt, and the reason why the modern world insists on cleanliness is not so much becuase it is a virtue of itself, but because dirt is the means of the dissemination of pestilence. And what is true of human affairs is true even more acutely of the bees, and therefore, partly by persuasion, this habit of dirtiness as applied to the keeping of bees must be discouraged.

Then, of course, there is in every class of society, even amongst the most austere and upright, always a residuum of people who are dishonest, and those dishonest people are often the ones who leave their dirty hives about in the hope that they will pick up clean bees. That sharp practice must, if possible, be stopped. Then there are even people who, from ignorance or worse, will sell stocks of diseased bees. Such cases have come under the notice, I believe, of expert beekeepers. That also must be stopped. There is not any room in the modern world for wicked people! Much in those directions can be secured, and is being secured, by the public-spirited action of beekeepers in different parts of the country. More, I think, can be secured presently when the beekeepers have the encouragement which, I hope, this afternoon we will give them, or which they will give themselves.

In the second place, and in the case of this disease which is known as "Isle of Wight" disease, there does appear to be good ground for believing that certain hybrid races of bees stand up against this disease better than the pure races. I am aware I am getting now into the domain of controversy; I do not propose to go into that domain. I will merely state that when this question of disease came up I had that open mind which accompanies ignorance on the subject, and I caused an inquiry to be made by many practical beekeepers in different parts of the country where hybrid bees, Dutch and Italian, had been tried. The inquiry was made by expert beekeepers, and I read the results with care and attention and pondered them very closely. The results were perfectly convincing—not convincing that for always and for ever the hybrid stock of bees was going to resist all sorts of diseases—but they were quite convincing that it was worth while putting one's money on that horse, that it was worth while trying on a large scale the introduction of Dutch stocks and Italian queens and producing hybrids, and, as you all know, we did introduce on a moderate scale Dutch and Italian, and—thanks again to the generous help which we had from beekeepers in the different counties, we have been able to distribute some 200 or 300 stocks of Dutch bees and something like 700 queens, and I am informed that up to the present some 1,500 nuclei of stocks have been raised. So that in the course of a few years there will be, for better or for worse—I hope for better—a considerable number of these little strangers within our gates. It is quite probable that they will have to be strengthened up by the occasional introduction of Italian queens. We are making preparations for such introduction. But we are none of us satisfied that that expedient is going to solve our problem, and we believe, the more we look into the matter, the greatest thing—that which is going to help the bee industry most—is the introduction of legislation which will impose the minimum measure of cleanliness and decent beekeeping upon those who take part in this industry. (Hear, hear.)

We do not wish, and I am sure none of us Englishmen at all events wish, to have a whole penal code applying to every possible industry whereby any man who does anything gets himself fined. We do not wish, I think, to introduce that system of State "bossing" which was so characteristic of Germany before the War. I for my part am most anxious to keep all legislation within the narrowest bounds possible; but in the face of the declared views of beekeepers—we have had representations from 37 Beekeepers' Associations, from 39 counties, and other public bodies declaring in favour of legislation—in the face, then, of the declared view of people of experience, we feel that we cannot any longer resist, in the interest of the general community, the introduction of a reasonable measure of legislation.

But we want that legislation to be as kindly and as instructive as possible. We want it to be used side by side with the most careful and active propaganda—propaganda undertaken by people who really know what they are propaganding—although ignorance is no excuse for breaking the law—so that there shall be no reason why even the smallest beekeeper should not be aware that by practising bad customs he is not only condemning his own stocks to death, but is acting as a focus of infection of his neighbours. I believe when that is really known we shall find the same practices applied by beekeepers as we find now by all the better friut-growers. They also know that unless they adopt certain precautions their trees act as centres for the distribution of disease, and all, except a small minority whom we are hoping to weed out by legislation, now adopt precautionary measures. Similarly, as and when we know what measures to prescribe, I am quite certain that beekeepers will do the like.

Well, gentlemen, that is the present state of affairs. We have done what we could to lay the foundations for research; but I warn you, I have warned you, that with these foundations the building which is to rest on these foundations and the results which are to come out of that building must perforce be slow. In the meantime, we do not propose in our legislation to be too precise as to the disease we want to exterminate; we want to adopt, in this case at all events, a famous admiral's advice, and, referring it to all the diseases, we want to "sack the lot!" (Cheers and laughter.)

It is therefore for you to consider, and both now and always to regard ourselves, not as somebody being legislated for, but as copartners, as we all are, in the State, and as requested to contribute from long experience and from your creativeness of mind to the introduction into this country of legislation which shall be liberal in spirit and yet which shall not be futile in operation, so that at long last, although we may be the latest of all the chief countries in the world to introduce this form of legislation, perhaps in some respects we may introduce the best. (Hear, hear.) In any case, I hope the deliberations which are to take place this afternoon will result in some such success as that.

As I sit down, I would like to call upon Captain Wellington to outline to you the essential points of the proposal, a draft of which is before you, and, as you will notice, is marked "Confidential."

Captain Wellington: Dr. Keeble, ladies and gentlemen, I am sorry, on behalf of the Ministry, that this draft has not been circulated previous to the meeting, but owing to the fact that it has only recently been prepared, and also to the fact that it had to be sent for printing and had to be forwarded to the Legal Branch for final drafting, it was not possible to obtain the copies prior to the meeting, as otherwise there was a fear that the Bill might not be presented this next Session should it be decided to proceed with it. That point has not been cleared up yet, and it is still not certain whether it will be proceeded with this next Session, although we have every hope, if the general consensus of opinion is agreed that this course is desirable, that it will.

In dealing with the points in the Bill, I want to be as frank and as free as possible, so that you may understand exactly what is in our minds with regard to what the Bill contains and to how it will be worked in practice, so that there may be no mistaking what our attitude of mind is with regard to this measure, and also so that later on this afternoon you may express your opinions, and may no doubt make suggestions as to how the Bill can be most effectually put into force.

If you will take your copies, I will just run through, in the first instance, the various clauses and tell you exactly what each clause confers on the Ministry.

The first clause refers to the importation of stocks or queens. The second clause refers to the making of general Orders for controlling disease, and I should like under this heading that you should understand that in any Order which may be made the Ministry hope that it will be with the assent of, and only after consultation with, the beekeeping industry; that they shall be fully aware of what is proposed in the Order and what the Order proposes to do, so that they may understand exactly how it will be carried out.

In the second part of Clause 2 the Ministry is authorised to direct the destruction of the infected hives or stocks; and also the Minister or the Local Authority may in respect of such stocks which are destroyed pay such compensation as the Minister or Local Authority may think fit. I shall come back to that point of compensation later on.

The second part of Clause 2 also refers to the destruction of stocks which, though not diseased, may be suspected of being diseased, or it may appear in the opinion of the Ministry that the destruction of such stocks will prevent the spread of disease, and in that case compensation has to be paid to the value of the stocks and material so destroyed.

Clause 3 refers to the enforcement of the Bill and of Orders under the Bill. There is no necessity to deal with the second and third sections of Clause 3.

Clause 4 refers to the sale or the offering for sale of infected bees, and also covers the sale of infected appliances.

Clause 5, unfortunately, through an error, it is the second Clause 4 in this draft copy of the Bill, refers to Local Authorities and the delegation of powers to Local Authorities, and for (? to) the payment of the expenses incurred by them. I shall come back to this also.

Clause 5 (You will notice there are two Clauses 4. Clause 5 should therefore read Clause 6) refers to the inspection of apiaries. We shall come back to this also. (And) Clause 8, which is the only other important clause, refers to the application of the Bill to Scotland; and I should say here that that is subject, of course, to the Board of Agriculture for Scotland concurring in this measure. At present they have not been approached, and the Bill would therefore only relate to England and Wales.

Now, if you will run through the Bill once more I can refer to the various clauses in detail.

Clause 1, with regard to the importation, either prohibits importation or, if thought desirable, regulates the importation under certain restrictions.

Clause 2, as I have said, refers to the making of general Orders, and as I read through the various proposals which we should like to see conferred (? confirmed), you will see that a number of points have to be dealt with by general Order rather than by the powers conferred actually by the Bill. The various proposals for which it would appear desirable to obtain legislative enforcement, besides prohibiting or regulating importation of bees, are these:—

(ii) The destruction or treatment of bees affected with disease; that is covered by Clause 2 in the Bill. (iii.) Directing the destruction or disinfection of infected appliances; that is also covered by Clause 2. (iv.) Which is, by an Order under Clause 2, the exposure of (1) honeycomb or bee appliances where bees can have access to them, except in occupied hives, would be prohibited. I think that is one of the most important points which would have to be dealt with in any Bill. And the second proposal under this heading is to prohibit the exposure of unoccupied hives in such a manner that bees can gain access to them. These two proposals would be dealt with together under an Order issued under Clause 2. (v.) The inspection of apiaries, that is covered by Clause 5 of the Bill, Section 1. (vi.) Prohibiting the sale and movement of diseased bees. Clause 4 of the Bill prohibits the sale, and an Order issued under Clause 2 would prohibit the movement. (vii.) The inspection and, if desirable, the certification of queen-rearing apiaries could be done by an Order under Clause 2. And (viii.) The imposition of penalties for non-compliance either with the Bill or with an Order issued under the Bill, is covered by Clause 3 (Section 1).

Under these headings I have run through the chief measures which it would probably be thought desirable to bring into force, and I have shown how each could be brought into force. We should like very much to hear the views of the meeting on those various points.

Now, with regard to matters of general interest contained in the draft of the Bill, I said I would refer to compensation, which is mentioned in Clause 2, and I want you to be quite clear with regard to this question of compensation. I shall deal later with the general application and working of the Bill, but at this stage I should like to make it quite clear that in the event of the enforced destruction of diseased bees and appliances no compensation will, in practice, be paid, as the materials, if ordered to be destroyed, will be considered valueless. I think it is most desirable that you here to-day should know exactly what would be the policy on that point, because otherwise serious misunderstanding might arise. The important point, remember, is that the destruction of stocks or appliances will not be ordered except on inspection by a bee expert, and only when they are considered valueless.

Secondly, you will probably notice that various minor amendments will have to be made in the draft, and that the drafting is not textually quite complete.

The third general detail (*sic*) I want to raise (*sic*) is this: it would be possible to do this by an Order of the Ministry after the Bill is passed, and that is the registration of beekeepers throughout the country (Hear, hear.) I am very glad to hear the sense of the meeting on that point. It was a question which the Ministry thought desirable to refer to this meeting here to-day. It seems it would be a very good plan for several reasons, and, except from the point of view that it is an enforcement, I can see nothing undesirable in it. It would supply very valuable information for educational work in the counties, both with regard to Beekeepers' Associations and also the statutory authority which is responsible for educational work in beekeeping, viz., the County Agricultural Education Committee or its sub-Committee, the Horticultural Committee. It would assist very much the working of any Bill or Order made by the Ministry. And thirdly, what is more important than either of the two I have mentioned, it would provide statistical information indicating the prosperity or otherwise of the industry in this country. I mentioned at the beginning of my remarks that it would probably be desirable for a Standing Committee to be set up with reference to beekeeping, and I should like to make a suggestion here that it might be possible to arrange for a Bee Committee to be constituted to form part of the Horticultual Advisory Committee which is already attached to the Ministry. This committee is of an advisory character only; it has not executive powers, but all important questions relating to those sections of the horticultural industry which are represented on the Committee are referred for advice and discussion to the Committee by the Ministry before they are dealt with. The Committee is a means of obtaining that co-operation between the Ministry on the one hand and the horticultural industry on the other, and of preventing measures being carried by the Ministry in the face of the industry. I want to make this aspect of the Committee quite clear. Dr. Keeble also referred to it in his remarks. If this Bee Committee is set up, the statistical information obtained from the Registry of Beekeepers would be extremely valuable, and the Committee would always be able to feel the pulse of the beekeeping industry of the country.

Now with regard to the general administration of the Bill. As I said, any Order which was issued under the Bill would only be issued after a consultation with the Standing Committee. The Ministry regard the effectiveness of the Bill to depend entirely on the co-operation between beekeepers and the Ministry, not only with regard to working the Bill, but also with regard to the educational work, which will do much to cause the removal of the sources of disease. It seems to the Ministry that probably more can be done on the educational side than on the legislative side. (Hear, hear.)

The two go together, however, and it is most desirable—in fact, it is the crux of the whole matter—that Beekeepers' Associations in each county, the responsible authority for education in the county —i.e., the Agricultural or the Horticultural Committee—and the Ministry should work together in unison and have a common plan of action with regard to beekeeping matters on the educational side, and it would then only be for the Ministry to invoke the powers conferred on them under this Bill or under any Orders made under this Bill in any flagrant cases of neglect. It would not be a question of enforcing Orders in every case of disease throughout the country. An Order under the Bill would only be enforced when every other means had failed.

Now, you will notice that there is nothing in the Bill, and I have not said anything so far, with regard to general notification of disease, and it appears to the Ministry impracticable and unnecessary, in view of the wide distribution of disease at the present time. Notification —and I should like you to understand exactly what notification would mean—would mean, firstly an enormous amount of clerical work; secondly, it would mean innumerable inspectors, especially if action had to be taken in every case of notification—in fact, it would be practically impossible to carry out effectively the measures which would be necessary after notification. Consequently, the expenditure resulting from notification which would be incurred would probably mean that Parliament would throw out the Bill as one of doubtful national economy. It would be much better to have a more reasonable method of operating the Bill, and to exclude general notification, somewhat on these lines: First, by educational work to show the necessity of removing the sources of infection, carried out by Beekeepers' Associations, beekeepers themselves, the county authorities, and the Ministry, working in co-operation. Cases of neglect to maintain hygienic conditions in the apiary would be dealt with by persuasion first, and the Orders of the Bill would only be enforced when these persuasive powers failed. That is to say, in the event of a centre of infection remaining in a district, and the owner will not be persuaded to clear it away, then the Ministry would expect to be informed of this centre by either the county authority or the Beekeepers' Associations, and they would then take up the case and deal with it. The enforcement of the Bill and its Orders by the Ministry will be carried through by a small staff of inspectors who will be trained in beekeeping, and this small staff will work under the general direction of the technical bee staff at the Ministry.

It is not suggested to delegate the powers of the Bill—at any rate, at first—to local authorities. You will no doubt be aware that in the case of the Destructive Insects and Pests Acts the administration of Orders under these Acts were at first delegated by the Ministry to local authorities, but it was found after some years' enforcement that nearly every local authority administered the Orders in a different way. It has recently been found desirable for the Ministry to take back the powers they delegated and to carry out the work themselves, and, acting on experience obtained in working these Acts, it is proposed with regard to bee diseases that the work should be carried out directly from the Ministry, who would not delegate their powers to local authorities.

I think I have covered all the points which are contained in the Bill and in the Orders which it would probably be found necessary to issue under the Bill, but I should like to again draw your attenion to the necessity for close co-operation, so far as the eradication of bee diseases is concerned, between all the parties connected with the beekeeping industry; and also to this point, and it is a very important point, that any Order which the Ministry might propose to issue would only be issued after consultation with and acquiescence of the representatives of the beekeeping industry, probably with a Standing Bee Committee of the Horticultural Advisory Committee.

The Chairman: I have now to invite discussion, and it will, I think, conduce to the harmony of the meeting if speakers will come to the platform, and will preface their remarks by announcing their names, so that they can be reported. The meeting is now open for discussion.

Mr. Walter F. Reid: Would it not be as well, sir, to take the clauses one by one? If we do not, I do not quite see how we are to arrive at the sense of the meeting on each point.

The Chairman: I am perfectly prepared. I am entirely in the hands of the meeting but I purposely refrained at this stage from doing that, because I thought the meeting would probably prefer to discuss and clear out of the way the questions of principle—first of all, do you want legislation or do you not; secondly, should registration be included in legislation or not—(cries of "Yes")—and thirdly, should the administration be conferred on local authorities—if that were argued, I should have something to say about it—or should it be carried out by headquarters? I submit, if you take the principle first, we can, in conclusion, go through the details. But I know what it is when once we start reading this legal phraseology; half the audience will fail quickly to understand what it really means, whereas we have all got the principles in our minds.

Mr. Reid: May I suggest that Mr. Cowan, the chairman of the British Beekeepers' Association, who has had this matter before him for a great number of years, and knows perhaps the views of all the beekeepers better than anyone else in this room, gives us his views?

The chairman: I hope he will.

Mr. T. W. Cowan: I have only had this paper put into my hands as I came into the room, so I have not had an opportunity of thoroughly studying it, but I think, taking it altogether, I am in favour of the scheme, as it is proposed that the Ministry should undertake the whole management of this thing. I should like to suggest, as our Chairman has suggested, that there should be a registry of beekeepers. I know how important it is. In our County of Somerset we started last year, and have now got a register of every beekeeper in the county. We did it through the police, and we got a complete register in that way. We were able to get the number of stocks the beekeepers kept, and the number of stocks they had lost, and we found, on the whole, that about 90 per cent. of the bees had perished in the county.

Now with regard to compensation; that is a question, I think, to be discussed. I myself am not in favour of compensation. I think bees that are diseased are not worth anything, and the sooner they are got rid of the better. It is for the benefit of beekeepers and for the neighbourhood. I do not think any compensation should be given. But if you are going to destroy hives and appliances that can be disinfected, of course, in that case, I should certainly say that you ought to have compensation, but not otherwise.

I think, with regard to the way of working that it would be much better, as has been suggested, to work it through the Ministry, and with the Agricultural Education Committees of the different counties. We are doing that in Somerset. The Agricultural Education Committee is in thorough sympathy with the Somerset Beekeepers' Association, and we have formed, from the Horticultural Sub-Committee, an Advisory Bee Committee.

The County Agricultural Education Committee have funds that Beekeepers' Associations have not, so in that way they are able to help us considerably. As I say, we have formed what we call an Advisory Sub-Committee, which consists of certain members of the Somerset Beekeepers' Association and certain members of the Horticultural Committee. That, so far, has been working very well indeed, and through that channel we have been able to re-stock a great many apiaries in the county.

Why we want legislation is this. I can give you an instance in our own county of what has been done quite recently, this last year. We supplied nuclei with queens to several of those who had applied for them, and we issued leaflets, larger leaflets than these, with very full and detailed instructions on how to manage bees and how to disinfect hives, and what they were to do. Notwithstanding that one of our experts went round and found one of the nuclei was being put into a hive that had not been disinfected, after giving them these pamphlets. Now, what are you to do with a person like that?

The Chairman: Disinfect him.

Mr. Cowan: The Chairman says, disinfect him. We should like to do so, but we have no compulsory power. We cannot go and tell him, "You must disinfect," so there we are in a difficulty, and in that way, of course, it will be some time before we can really say we have got rid of the disease in the county.

I do not think I need say much more about it, except that I quite approve of the step that has been taken. I think all these clauses, after they have been thoroughly considered, will be approved, and I think we are very fortunate in getting the Ministry to undertake the matter at last. I have been agitating this for years, so has the British Beekeepers' Association, and for years we have been pointing out the dangers of these ignorant beekeepers, and asking for powers to do something towards stopping the spread of disease, and I congratulate the Ministry on having taken the matter up seriously. I am very glad to see such a large meeting of beekeepers and other representatives here to-day.

An Hon Delegate: May I ask if it is your intention to take any resolutions on the various points raised?

The Chairman: It is my intention to take resolutions on the larger issues.

The Hon. Delegate: On the three principles you have just referred to?

The Chairman: Yes. If I omit any principle, and anybody else thinks it worth while, I shall be prepared to accept a proposal from him. We want to get a perfectly clear, explicit view on the part of those present.

The Hon. Delegate: The first question would be, is legislation desirable?

The Chairman: That is the large thing; I think we might turn that out of the way. (Cries of "Agreed.") Is there anybody here who would like to speak against the proposal that legislation should be introduced?

Mr. John Silver (Croydon): Mr. Chairman, ladies and gentlemen, it is seven years ago now—that is, in February, 1913—when the last attempt to legislate was brought forward—that is to say, it was brought forward in the autumn of 1912 and reappeared in 1913. Then, sir, there was throughout the country, a very determined and active opposition to the principle of legislation. I was one of the moving spirits in that active opposition, which went on until July of 1913, when Mr. Asquith, in the House of Commons, after promising a Second Reading on a certain day, when that day arrived said that the whole thing would be dropped. He and the Government were astonished at the opposition to legislation throughout the country.

Rev. H. Morgan: We do not want history.

Mr. Silver: Exactly; I will come to it. I do not care what opposition you make. I am prepared for any opposition; I am used to heckling.

The Chairman: I must appeal for a quiet hearing for Mr. Silver.

Mr. Silver: That day Mr. Asquith said he was surprised at the opposition. The Ministry, the Government, then, in 1913, were given to understand that there was no opposition to the principle of legislation in the country, so you see the Government were deceived. They found they had been deceived, and they dropped the whole thing. That is seven years ago.

Now, the Bill that was brought forward then is child's play to the measure that we have in our hands here to-day—child's play. Here, in these proposals, the beekeepers of the country are asked to open their mouths and shut their eyes and take whatever the Ministry would like to order them to do. (Cries of "No, no.")

The Chairman: In the interest of accuracy I must intervene to say the Bill which is being introduced to-day is the same Bill which was introduced before, exactly.

Mr. Silver: I say no, sir. I have a copy of the Bill at home; I have thoroughly studied it. There are one or two persons present here who worked with me in that campaign six years ago, and they agree with me that this is far worse than it was then.

Let us come to one or two points. First of all the argument is that the diseases of bees in this country have so overwhelmed the industry that legislation is called for in order to preserve it. Now, which is the disease that has done this? What is known as "Isle of Wight" disease. After ten years of investigation by the Government, by their experts—after ten years, mind you—they are unable at the present moment, your Chairman has told you, either to define what "Isle of Wight" disease really is or to give us a remedy, to give us a cure, and tell us how to deal with it. (Hear, hear.) And yet, after ten years of investigation, with all the resources of a Government, with all the powers of calling in the scientists of the world, they are unable to tell you what it is, and yet we are asked here, as practical beekeepers, who have, many of us, overcome this difficulty ourselves without the aid of science—overcome it by practical common-sense and observation. What is that? That is science, is it not? It is a science of overcoming a difficulty. And now we are asked to give powers to a Ministry to compel us to deal with a disease that they do not understand themselves, and they cannot tell us what to do.

Now, sir, what I say is this, that the time has not yet arrived for a measure of bee legislation to be imposed upon the beekeepers of this country that will meet with general acceptance. That is my first suggestion. For this reason, that the investigations of scientists have not reached that point to declare with any definite certainty what "Isle of Wight" disease is.

Now let me give you an instance; I will confine it to this one thing. Take an instance that occurred at Walton Heath, in Surrey. At Walton Heath, in Surrey, in 1918, there was a hive with what is known as "Isle of Wight" disease. Several experts from the Surrey Association were called in to see this hive. They sent up samples of these bees to **The British Bee Journal**; they declared it to be "Isle of Wight" disease. These two ladies came down to visit me—an eleven or twelve miles journey on a bicycle. I went and saw those bees that were certified by the Surrey experts, by **The British Bee Journal**, as suffering from "Isle of Wight" disease. Directly I got there I laughed at it. I am not afraid of "Isle of Wight" disease; I have cured heaps of it. What is the matter with these bees is that it is a race of bees that is deteriorating; that is to say, the race is worn out, they are subject to disease. All you want is a better type of queen and a better type of bee put in there. We did so, and the following spring (last year), it was the best hive in the whole of Walton Heath. I can refer you to the two ladies—Lady Hawkins, of Walton Heath, and Miss Reid, at The Oaks, Walton Heath. You can refer to these two for corroboration of what I say.

Now I say this that "Isle of Wight" disease, as defined by **The British Bee Journal** and as defined by the beekeepers of this country, is largely due to two causes—one a race of bees that ought to be exterminated—that is to say, they were worn out, the race had deteriorated—the other, want of air.

Rev. H. Morgan: Mr. Chairman, I must appeal to you. I have come from next door to New York, and I want to get home. I think I am voicing the opinion of a large majority of the gentlemen present when I say that this speaker is not speaking to the point.

The Chairman: I have already arranged with the present speaker to conclude his remarks.

Rev. H. Morgan: Thank you very much.

Mr. Silver: I will confine my remarks to one point, and the one point is this—that with regard to the most destructive disease that has been destructive in this country, that has depleted the apiaries of this country, the scientists and the Government are not in a position to declare definitely what that disease is, and I say that the beekeepers of this country are not justified in giving power to a Ministry who do not know this and cannot tell us. (Hear, hear.)

An Hon. Delegate: May I ask one question before we go on? Perhaps it will clear the air a little? Can bacteriological knowledge at present say definitely what is the bacillus or bacteria which causes "Isle of Wight" disease?

The Chairman: I ought to say, in answer to Mr. Silver, although it is difficult to distinguish—I am informed by experts, extremely difficult to distinguish—by the naked eye examination, it is a matter of certainty, as in other bacterial diseases, to distinguish the presence of **Nosema apis**, and the research people have got that technique worked out quite satisfactorily.

Mr. P. E. Wagstaff: May I ask a question arising out of that, sir? Is the judgment of the expert beekeeper, who knows how to handle bees, to be relied on in giving a definite answer as to whether bees have or have not "Isle of Wight" disease? Of course, in the later stage, anyone can tell.

The Chairman: I think the answer is, there would be no decision—obviously, there can be no decision in the case of "Isle of Wight" disease at present—on a naked-eye examination; but my previous answer meets your point, namely, that it is quite easy, just as one does in the case of influenza or other similar diseases, to diagnose the disease microscopically, and that would have to be done in any case where prosecution was intended.

Mr. P. E. Wagstaff: Have these people, the naked-eye experts, any value whatever?

The Chairman: I should say they had very great value, to know whether the thing is clean or unclean. Obviously one of the chief causes of disease is insanitary conditions, and an experienced beekeeper ought to be able fo tell—like Mr. Herrod-Hempsall can tell—whether they are getting the right amount of air, and so forth.

Mr. P. E. Wagstaff: I have the report of an Association which proposes to issue a certificate when bees are unhealthy and are sold. Is such a thing as that to be of any value whatever?

The Chairman: I should be very doubtful about accepting the certificate of any private society as being of value.

Mr. E. C. Middleton: May I take it, Mr. Chairman, as a definite statement by you that bees with "Isle of Wight" disease must have **Nosema apis?**

The Chairman: No; I did not make that remark.

Mr. E. C. Middleton: Is that a definite statement of yours?

The Chairman: No.

Mr E. C. Middleton: Very well, then; the statement that you make is that the bacteriologist knows all about it.

The Chairman: I do not want to go into the whole question of bacteriology. I thought I was talking to people who had informed themselves of the latest work and knew more about it than I do, which I am certain is the case. You are aware of the fact that all the experts are disagreed with respect to detail. The present experts those who are now working at the disease, are all agreed in this, that where **Nosema apis** is present there is a diseased state. Whether that microbe produces all the symptoms of "Isle fo Wight" disease is a matter which, I believe, is engaging your attention.

Mr. E. C. Middleton: Quite so; it is not understood.

The Chairman: But I really do not think, ladies and gentlemen, it would serve any useful purpose if you were to ask me, who have only a general knowledge of the subject, though a trained investigator, but having no specific knowledge of this problem, a lot of technical questions which I am certain you can answer much better than I can.

Mr. C. B. Bartlett: May I suggest that we have an account of legislation in other countries?

Rev. H. Morgan: I think the question before the meeting is as to whether legislation is desirable or not. I think we should confine our attention at the present time to one or two points. Is bee disease in the country? Not what Tom, Dick and Harry think about this, that and the other in connection with it, but is there disease? And is this disease, which is in the country, decimating the bees of the country, doing harm to the bees of the country ? Now, let us decide once and for all, brother beekeepers, as to whether there is disease in the country, and, if there is, whether we are going to have legislation to stamp it out or not. (Cheers.)

Mr. Reid : I do not know what procedure you wish to adopt—whether it will be necessary to move a resolution. have it seconded and put to the meeting—but I presume some stage in these proceedings will come when the opinion of the meeting will be taken.

The Chairman : Not every member would wish to speak on the subject. As soon as there is a lull in the flow of speakers I will ask for a resolution. I think, however, it would conduce to the more rapid conduct of business if somebody would move a resolution, and then speakers who wish to oppose it or support it could do so. But I shall have now to ask that all speakers shall, in the first instance, and on a specific topic, confine their remarks to not more than three minutes ; otherwise, I am afraid the meeting will go on indefinitely. Would anyone, to help the meeting on, propose that legislation is desirable ?

Mr. Reid : If I may be allowed, I will not take up more than one minute, and my resolution would be—" That this meeting approves of the principle that legislation for the prevention of disease is desirable and should be asked for."

Mr. Hayes : I beg very heartily to second that proposition.

Mr. E. C. Middleton : To me, you are putting the cart before the horse. Before you know whether legislation is desirable it is just as well to know what the nature of the legislation is to be. What on earth is the good of saying we want something when we know not what it is ? There is no doubt there is a great deal of disease, but it is certain, as that gentleman said on the platform, the disease is not understood. Is there anyone here present who would go to a doctor to have a prescription made up if he did not understand their disease ? Not for a moment. You want to go to a man who understands the case. The case is not understood, and you ought to commence that investigation instead of legislation. Settle what it is, and when you have settled what it is give us legislation as strong as ever you like.

The Chairman : I do not wish to take any part in an argument ; I am here in an impartial capacity ; but I have some historical knowledge of diseases other than bee diseases, and the statement that legislation is to wait for an understanding of the nature of the disease is inaccurate. I say that on my own knowledge.

Mr. E. C. Middleton : I cannot understand that you should express the opinion that we should have legislation to deal with a matter that the Government does not understand.

The Chairman : It is not a question of understanding the disease ; it is a question of understanding the cause, which is a very different thing. You may know that you are ill, you may not know the cause of your illness ; you may know you are infectious ; you may not know the source of the infection.

Mr. E. C. Middleton : The source of the " Isle of Wight " disease is not known, and that was why I asked you the pointed question whether you were quite satisfied that with the presence of **Nosema apis** you had " Isle of Wight " disease, and to that the reply was " No."

An Hon. Delegate : I beg to move the resolution be put.

Another Hon. Delegate : Crime is not understood very often, but it is punished.

The Chairman : Gentlemen, I am most anxious that all views should be heard. There is only one truth, whether it please or displease. We are all anxious to get at the truth of this matter, though we may not be able to come to an agreement. If any other speaker who cannot defer his remarks until we come to some other subject desires now to address the meeting, will he do so ? Mr. Bartlett, I believe, has the first call. Would your remarks come equally well later ?

Mr. Bartlett : I think not. It would be of great interest to us to know what has happened to other countries in regard to legislation.

The Rev. H. Morgan : I crave your indulgence, Mr. Chairman, ladies and gentlemen, just for a few minutes with regard to this matter we are discussing this afternoon, as to whether we are going to have legislation. Not as to whether the Government understands the disease or not, we none of us understand it, but we know the effects of it. We have got the disease, and we have to stop it in the best way we possibly can, naturally. As the Chairman has so kindly and ably put it this afternoon, the investigators will find some means of curing it. We are not here to cure it this afternoon. What we are here for this afternoon is to legislate to help the matter, and it is the only way, I think, that we can prevent it spreading even more than it is at the present time.

I will give you some of the instances that I have come across, and I will tell you why I am a great advocate of legislation. I have been a beekeeper for five years ; I have acted as a county expert for two counties, and at the present time I am under another authority as well, but that does not matter ; it proves to you that I know something, and have had something to do with bees for the last 25 years. What we want to stop is the spreading of disease. Some years ago those of you who read your **Bee Journal** and followed the advertisement columns saw in these columns an advertisement for 300 or 400 swarms of bees in the springtime. I know the history of some of these swarms. The only interest that the man who advertised had in these bees was the profit he made out of them. I have had to investigate the outbreak of disease in various counties, and I can tell you this, that in every case of outbreak, the outbeak was traceable to the bees that were sold by that individual. The first case I ever came across was in Pembrokeshire, and I asked the man, " Where did you get these bees from ?" He said, " From so and so "— the very same person again. I do not blame the man so much as the system. That system must not be allowed, and I firmly believe this, and I can prove it, that if we had had legislation, say, for the last 10 years, we should never have known in South Wales what the " Isle of Wight " disease was. You may laugh, but I can tell you that every case is traceable to importation.

Facts are hard things to controvert. We are wide awake down there as well as yourselves, and we know what we are about. We know where these bees came from, and " Isle of Wight " disease was never known there until the bees and the " Isle of Wight " disease were imported. I guarantee that wherever you investigate that disease in West Wales you will find it traceable to bees that have been imported.

Well, now, we are here this afternoon, and let us confine ourselves; do not let us ramble all over the shop ; let us come to the point. We have got the disease among our bees, we do know that ; the Chairman has told us we cannot cure it, what is the next best thing we can do ? I say legislate, to prevent it spreading, and to remove the sources of infection. The Chairman has put it very fairly and as clearly as he possibly could put it. They do not wish to be hard ; they took the beekeepers into their confidence ; they will not move without the beekeepers as a whole ; what more do we want ? I have never known of anything so fair. They are not going to play the top dog or anything of that sort ; they are not to move without us. They want us to legislate or combine—if you like to put it in that way—to get some means of stopping the spread of this disease.

Our friend, Mr. Cowan, said he did not believe in compensation. Now there are many stocks of bees, especially those of (? with) foul brood that are worth compensating. Some of them are not worth anything at all except for fire purposes. Leave that alone, but let us come to the point. We know we have the disease, let us make up our minds what we are going to do. Let us recognise whether we have the disease or not, and then let us decide what we are to do, legislate or not.

Mr. Pearman : A certain publication about eight years ago contained an advertisement offering a number of swarms. I was one of the first to bring disease into our county, Derbyshire, and I did it by purchasing swarms. I also hold a post card here coming from Lincolnshire, which speaks of the very same thing with regard to the swarms they had sent Lincolnshire being affected with disease. It is quite true that none of us knows really what this "Isle of Wight" disease is, but we know it is there, and we want the power to stop spreading it broadcast into our counties. We want more power given to our County Association. We do not care so much about working through these Educational Committees.

The Chairman : If you would mind not bothering about that now ; there will be an opportunity of talking about that later. We are on the main argument now.

An Hon. Delegate : How many British Colonies have legislation, and how many Foreign States ?

The Chairman : The number of countries and Colonies is 14. There are 14 foreign countries, including our Colonies that have (*sic*) legislation.

Mr. J. B. Lamb : Mr. Chairman, ladies and gentlemen, may I express the hope that the time of this meeting will not be taken up by arguments in favour of legislation, because they are so numerous and so convincing that I feel sure it is simply waste of time to talk thus. I do hope that everyone who objects to legislation will have the opportunity of placing his views before the meeting, because I trust this is the last time that we shall have these—shall I call them—flimsy objections placed before beekeepers.

I have heard many objections during the last 10 or 15 years, but the only objection that seems to be popular is that the Ministry of Agriculture is to send about the country numbers of beekeepers or inspectors to go through apiaries during the brief period of the honey flow, in order to inspect the bees and stop the efficiency of the hive. That is the only objection I have heard worth mentioning. I leave it to you, ladies and gentlemen, to decide whether that is a real fundamental objection. I have heard many complaints against the Ministry of Agriculture in recent years; I am hearing complaints now, but I have never heard a complaint that the Ministry has been prodigal in expending money on the beekeeping industry. I venture to say, as we have a representative of the Ministry here to-day, that for every £1,000 spent on the beekeeping industry, there will be a good return of interest to the country, fifty times beyond the 5¾ per cent. now returned on the latest gilt-edged security. But what I hope, Mr. Chairman, is this, that no-one will speak in favour of legislation. We all know it is necessary; but those who deliberately think that there are grave objections to legislation shall lay their objections briefly before you this afternoon.

Dr. Rennie: I should like just to ask a question which I hope will reconcile the contending parties of the meeting. The question is this: Will it not be the case that associated with the Ministry in all the important decisions which arise in connection with the proposed legislation, particularly with regard to the question of whether disease is present or not in particular cases, will be certain of the investigators on the Advisory Committee?

The Chairman: The answer is, "Yes, undoubtedly." Of course, it is very difficult. I do not think you would like the Chairman to get up and answer himself some of the objections that have been raised, because it would mean his making another speech after each speech, but it is evident that the object of the Ministry in proposing legislation is to assist the beekeeping industry. You can only assist that industry if you know what the industry wants. You can only know what the industry wants if you associate with the actual beekeepers the investigators and apply administratively the results of investigation; and the answer, therefore, to your question is undoubtedly there would be associated in the body which would determine whether an order was to be introduced, there would be associated with those bureaucratic people the practical beekeeper and the investigator. That is what we do in every other department.

Well, Gentlemen, I really think, in spite of the very liberal-minded suggestion, that we should ask all conscientious objectors—(laughter)—to speak, we must now take the vote on this subject; on the question of the resolution, whether this meeting is in favour of legislation, and I will ask first of all for a general vote, and then as you go away, since I attach the greatest importance to this, I hope all those who have voted will put down their names and official designations. I think we ought to analyse this objection, and find out what it does amount to. We have heard it said that it amounts to a very considerable volume. The right of minorities is a most respected one, and the Ministry ought to ascertain and give consideration not only to the feeling of whatever the majority is, but also that of the minority. But, in doing that, it ought to know who the minority is(?); what title they have to speak authoritatively, because they would increase our respect for their voices very much. I therefore ask you to vote, those in favour of the resolution.

Mr. Barratt (Sheffield): In the first place, Mr. Chairman, ladies and gentlemen, we listened very attentively to the clerical gentleman there for six minutes— (Several voices: three minutes)—Six minutes if you will pardon me.

The Chairman: Do not waste time on that kind of thing.

Mr. Barratt: I must have the courtesy of a hearing.

The Chairman: I will secure that.

Mr. Barratt: He did not confine his remarks to the point. I must first protest very strongly against the shortness of the time which elapsed between the receipt of the notice of this meeting and the date of holding it. Captain Wellington has explained to us about the delay in the time of getting the notices out, but he had not explained to us any reason——

The Chairman: I must ask you to speak on the question. The question is whether legislation should be introduced or not.

Mr. Barratt: I protest, Sir.

The Chairman: You can speak on that motion. Other complaints, if you have any to make, we will be happy to hear afterwards. We wish you now to speak on whether legislation is desirable or not.

Mr. Barratt: Yes, quite.

An Hon. Delegate: Would it not be better that he proposed an amendment against?

Mr. Barratt: I will propose a resolution: certainly. I would draw attention to the impossible position in which the Ministry find themselves with regard to legislation. On the one hand, they have drafted this Bill for checking disease. On the other hand, they are breeding, fostering and spreading disease the whole length and breadth of the country—(A Voice: Explain)—countenancing the issue of the Food Protection Leaflet, No. 48.

The Chairman: I must again ask you, Sir, to speak on the subject, to give arguments in favour or against legislation. Any criticisms of the Ministry of Agriculture can be dealt with at your leisure later.

Mr. Barratt: Very good, Sir, I will withdraw.

Mr. Price (Staffordshire): I am not here to-day to put forward my own views. I have had a little experience of beekeeping, and I can guarantee at the back of me the bulk of the beekeepers in the four northern counties and also the beekeepers of Staffordshire. I have visited these beekeepers; I have heard their views, and they have not been represented to-day. Of all those beekeepers that I have visited there has not been one person that has objected to legislation. (Hear, hear.) My impression is that we may carry on here for a long time and dwindle away the time and not know where we are at the finish. So, therefore, those are my views. I have told you that I have found the same views amongst the beekeepers that I have come in contact with for the last 13 or 14 years, and I also have given you the number of objectors I have found in those areas.

Mr. Broadhurst (Wembley): I do not agree with legislation from a general point of view, but how you are to deal with the dirty beekeeper without legislation and registration I do not know. That is what we would all like to find out to-day. The man who keeps bees in the corner there; you know he has got the "Isle of Wight" disease, or at any rate he has got **Nosema apis**; you have no power over him whatever. How are you to deal with him unless you have some power from the Government, and then if he is not registered how are you to have power over him? I agree with legislation to include registration. (Cheers.)

Mrs. Fielding (Shropshire): As Shropshire is considered rather a naughty county we have sat outside waiting for the Ministry to bring this legislation forward for months, and I may say years; might I ask the Chairman not to delay any longer? As Shropshire is a very long way off I shall have to go soon, so I would ask you to bring forward the resolution now without any more delay.

The Chairman: I am glad there is a representative of Shropshire at this meeting to-day because she will be able to go back and report to her committee the reasons why the Ministry did not bring in legislation at an earlier stage. The resolution is before the meeting; I now propose to put it. It has been proposed and seconded; the proposer will be good enough to repeat the felicitous words that he used so that we may have the exact form.

Mr. Reid: There were very few words, but I am not quite sure that I remember each one of them. It was to the effect that legislation is desirable for the prevention of disease in bees. It was quite general.

The Chairman: The resolution before me is that legislation is desirable for the prevention of disease in bees.

An Hon. Delegate: I think you had better be in order and asked for an amendment.

The Chairman: Does anyone propose an amendment?

Mr. Lamb: I think, Mr. Chairman, we ought to be very careful in the exact wording of the resolution. I think it ought to be a little more comprehensive. To prevent disease in bees is ridiculous: what we want is to prevent the spreading of disease, "That in the interests of apiculture it is necessary that legislation should be introduced to check bee diseases." It is quite simple; legislation is necessary to check bee diseases. We must be careful because this resolution may get into the Press to-morrow; we do not want people about the country to read some ridiculous resolution such as this passed by some beekeepers.

The Chairman: Does the mover accept these words?

Mr. Reid: I do, Sir. My friend, Mr. Lamb, is a past master in putting his and other people's views into shape. I think it is very desirable indeed that we should have a wording that should be accurate in every respect. May I ask him to leave out the words "in the interests of apiculture"? It is the interest of Great Britain, the beekeepers, and everybody else.

Mr. Lamb: With pleasure. "That it is desirable to introduce legislation to check bee disease or to check the spread of bee diseases

The Chairman: The words that I have written down are "That it is desirable in the National interest to introduce legislation to control the spread of diseases in bees." That is the substantive resolution which has been proposed and seconded, and no amendment has yet been offered to it.

Mr. Bartlett: May I just be allowed to say that neither my friends nor myself are in any way opposed to the principle of legislation. I think there is an impression that we are, but that is not so. We simply desire that legislation should be very carefully introduced. People who now openly say they are not aware of any means of fighting disease should not be given very wide powers of handling bees throughout the country. It is much more necessary that research work should go on now. But the principle of legislation we approve.

The Chairman: I put the resolution to the meeting.

On a show of hands:

The Chairman: The motion is carried with one dissentient. There is a certain symbolism in the figures. The numbers are 99 to 1. (Cheers.) Gentlemen, I think, with your permission, I will ask for an expression of opinion on the question of registration next. That seems to be a clear-cut issue. Is that agreed; is there any dissentient?

An Hon. Delegate: It is desirable in the framing of the Bill to make it quite clear that legislation is wanted more for educational purposes than for anything else.

The Chairman: It is very difficult to put any explanation in the form of the Bill.

The Hon. Delegate: I think every person who keeps bees or has bees should be registered. In my opinion that is the only way in which you can get in touch with them; insist on registration.

The Chairman: Then there is no disagreement on that?

Mr. Silver: Might I make a suggestion that, coupled with registration, every person that keeps bees should make a return of the number of hives and the condition of those hives, indicating whether he has disease, say, twice a year, on the 1st to the 15th April, and the 1st to the 15th October. If a return were made by every beekeeper twice a year the authority would know exactly the position of the beekeeping industry throughout the country, and the condition of those bees.

The Chairman: A note will be taken of your suggestion.

Mr. Frusher: I represent Lincolnshire, and we favour registration.

Mr. Thomas: I suggest that no person be allowed to keep bees without a certificate.

Major Archer: May I move that this meeting approves of the principle of registration?

Mr. Frusher: I will second that.

An Hon. Delegate: I will support that.

Mr. Alder: I want to put a clause in the Bill to the effect that anyone who knows of any bees on his property should notify the same; there might be stray swarms.

Mr. Price: I think that would not work out in practice very well. I am quite agreeable to registration.

The Chairman: I think, if I may say so, what Captain Wellington said about notification is very true, and I think one ought to save you from yourselves. After all, notification would become a statutory obligation. We have many such obligations already; I for one do not want any more. I think registration would give you what you want, becuase it would give you means of ascertaining the general condition of the bees in the neighbourhood.

Mr. Riley (Leicester): Will that amount to compulsory registration?

The Chairman: If it goes into the Bill it must be.

An Hon. Delegate: May we vote, Mr. Chairman?

The Chairman: Gentlemen, I presume it is scarcely necessary to put it to the vote, but will you indicate?

On a show of hands:

The Chairman: That is carried without the one dissentient. (Laughter.) Ladies and gentlemen, Mr. Bartlett, who most magnanimously refrained from addressing us at the more crowded part of the afternoon, would like to say a few words to express his views on the subject of legislation. It is not re-opening the question at all, but I have agreed on your behalf that he should make these remarks, and he has promised to be very brief.

Mr. Ritchie: I want to ask a question about that registration business, which has now been passed: Is that to be notified to the County Councils the same as we do about the sugar at the present moment?

The Chairman: Probably. I think in that work what we would do would be this. The Ministry would empower the County Committee, which would be probably a joint Committee of beekeepers and a Horticultural Committee; that would serve as the model. I cannot commit myself, but I feel pretty certain that would be done.

Mr. Bartlett: Mr. Chairman, ladies and gentlemen, My friends who have been associated with me in opposing legislation in the past have always desired to say that we did not oppose the principle of legislation, but we are extremely anxious that whatever measures are taken should be taken with caution and deliberation, because I think beekeepers who read the foreign journals and know what is happening in other parts of the world, where legislation has already been given, are at one with me in realising that in no such country has legislation been able to prevent the spread of disease. Legislation is designed to stop the spread of disease, but it has not yet succeeded in doing so, and at this present moment the two chief writers in the American journals, Mr. Doolittle(?) and Mr. Pellet, are writing against legislation. That I think is remarkable because they, like yourselves, are not yet aware how to deal with disease. The unhappy part of the thing is that we may keep bees, and keep them carefully, but yet not be able to check disease. I have had long experience of bees, and if I am unable to prevent disease, where are you to get inspectors with the best will in the world who can stop it? I suggest that, as our knowledge of the checking of disease is so elementary, if it is in existence at all, it would be far better for us to go very slowly with our active measures; that we had better find out how to do things first and then do them.

In the meantime there is one thing that might be done. If you will get bees that are absolutely free from diseases, and then introduce those to areas that are completely free from any other bees, you will meet with success, but as long as you import bees, from any country, good or bad, and pour them into areas where there are already in existence bees with disease, you will have trouble. It is quite impossible to talk about re-stocking counties as long as you leave any bees there at all, because it is quite impossible to tell for some months whether they are suffering from disease or not. Bees that appear to be quite sound may go under any time.

Speaking from a very large experience, I can say it is almost, if not quite, a hopeless job trying to bring sound bees, immune bees, resistant bees, or anything else into a district that is already infected. You want to clear things out first, and, if the first use the Ministry would put their powers to would be to take some small area and absolutely clear out all bee life before they tried to restock it at all, I think they would meet with such success that they would have no trouble at all in getting people to agree to having the whole of the existent bees cleared out.

An Hon. Delegate: What about the bumble-bee?

Mr. Bartlett: I do not think they are of the same character, nor do I think they are communicable to the hive bee. So little is known I do not think you can say anything is proved.

The Chairman: We have got over two of our points. The third point we want your opinion on is one which is not of great importance, to which Captain Wellington has referred, namely that, as we proposed, the administration of legislative measures shall remain in the hands of the Ministry. Perhaps you would allow me to give reasons why we were led to make that recommendation.

It is fashionable now to delegate all powers, and it is desirable that all powers that can be delegated should be delegated. But in my experience, whenever you are dealing with a general proposition such as disease, and I have had to administer quite other sorts of disease, as, for example, Wart Disease of Potatoes, whenever you are dealing with a matter of disease, you cannot delegate your functions at all, because when you have delegated them into 60 departments, corresponding to 60 odd counties, you have not got rid of the problem. It is a case of the whole being very much greater than even the sum of its parts. You have to keep an eye, in other words, on the relations of one part of the country with another if you delegate to several counties serving different parts of the country; there is nobody to keep that eye; you have given away the powers which you might want to exercise and, therefore, although I have no use for bureaucracy myself, I see no way in which effective administration of legislation of this kind can be carried out except through a central body.

I am, frankly, against devolution in that respect, but I am entirely in favour of that central body doing its administration work only in consultation with the expert as I have already described, and in close relation with the County Authorities which we have set up for this purpose.

Those are my views, which may carry some weight with some of you because they are entirely disinterested. It will not be I to administer this Order if and when it comes in, but I think it is a very great point administratively which this meeting should be aware of, and for that reason I think it is wise to put in the Bill that the Ministry should retain the administrative power in the legislative enactment.

An Hon Delegate : I think we may take it from that that you mean to say our bees would not (*sic*) be handled only by experts ?

The Chairman : Quite.

The Hon. Delegate : If the powers are delegated to a local authority they may appoint anybody.

The Chairman : I do not think they ever would, but they do sometimes. A policeman had to determine what potatoes had wart disease.

The Hon. Delegate : I have no objection to an expert, provided he is a proper expert, but I certainly object to any and every individual who thinks he knows something about it coming and inspecting them.

The Chairman : May I take it that that is the general view of the meeting ?

An Hon. Delegate : May I ask this question : Whether this process of leaving it to the Ministry will not be a very slow process, and evil will be done before it reaches the Ministry, and they can take action ?

The Chairman : It is not so bad as you might think. There is a certain delay in information getting to the notice of a Ministry, but the thing is rather more organised now. There are representatives of the Ministry in every division of the country, so that it is not the case of having to send right up to Whitehall ; there is always a local representative. I do not think there will be more delay than necessarily attaches to any work of Government.

Another Hon. Delegate : I should like to ask a question for the purpose of obtaining information. It has been suggested that notification is not practicable ; I am not meaning to suggest that it should be done, but that the Ministry should tell us what can be done and how far it is practicable. How is the Ministry to get the information to know when to act ? What could be the means taking place to know when there is disease about, short of notification ?

The Chairman : Each county has, or will have ; most of them have already—I have, I hope expressed my thanks to the Beekeepers' Associations—most counties have a committee containing representatives of beekeepers, and all others interested in general cultivation. Each county committee has a horticulturalist interested in a whole lot of small cultivation. He has assistants, and on that staff there is, let us say, a part-time beekeeper who will make it his business to visit all parts of the country, not as an inspector, not as a policeman, but as an adviser. In the course of his duties he may encounter cases of gross neglect. He will try and persuade, and ascertain whether the persuasion has been efficacious, but when it is not he will probably get some other member of the committee to come down and report it, and then it will be dealt with. But you cannot mix up your policeman and your teacher ; it is a very dangerous thing ; we have often tried it at the Ministry, and we have always failed, because the one is always mistaken for the other.

An Hon. Delegate : I would like to say one more word. You will find that this question of inspection of hives for disease is the sorest point of all in the question of legislation, and I would ask you all, on behalf of every beekeeper here present, to do everything you possibly can to see that inspection is carried out properly by proper expert beekeepers.

The Chairman : I have had such a lot to do with this inspection, and it was such a terrible thing for me when I started on it, but I find, as a matter of fact, we have to do a good deal of inspection of nurseries and fruit plantations, and in point of fact, provided it is done by men who have two qualities, one is knowledge and the other is tact, there is no difficulty ; but you have to find men with both qualities.

The Hon. Delegate : The proceedings are nearly finished, but I should like to draw the attention of the Government to one particular point which hits the beekeeping industry, and especially the future of the beekeeping industry. In your address you referred to the value of the home-produced honey as between £500,000 and £1,000,000,and the value of the honey imported into this country from abroad as between £2,500,000 and £2,750,000. What some of us want to know is this : What is the attitude of the Government with regard to this, and how would they propose to deal with this question in the future ? Do they propose to encourage the importation of honey from abroad, or do they wish ro encourage the production of honey at home ?

The Chairman : I am sorry to interrupt, but this is a matter which concerns the Cabinet, and not a single Ministry. I enjoy it, because it comes up so often, but as a matter of fact it is a matter of high policy, and therefore can only be discussed at a Cabinet meeting.

The Hon. Delegate : Can nothing be said ?

The Chairman : I do not think it is worth our while discussing it ; really I do not.

The Hon. Delegate : What I want to draw attention to is this : That within three-quarters of a mile of where I live tons of honey are bottled up with the name of some paltry firm, and sold as English honey. What are you to do with that?

The Chairman : That is another story, which British beekeepers will, I am sure, in proper time and place, take up, but it is not particularly revelant to our meeting this afternoon. I would ask, therefore, if any gentleman has any other point of principle that he wishes to bring forward, that he should do so now.

Mr. Reid : There is one item here which says, " Every local authority shall appoint such inspectors and other officers as may be necessary for the execution and enforcement by the local authority of Orders under this Act." Well, now, Sir, that does leave the door open very wide.

The Chairman : No. I think I may interpret that. Of course, there is a certain common form of drafting in these Bills, but that does not contract us out of our responsibility. This is common form. Though the powers can be delegated, it is the intention of the Ministry to retain these powers. I think you may accept it. You can have it in writing in the " Report of the Conference," if you like, that it is the intention of the Ministry to retain those powers ; but it will not do to take a draft to your legal adviser and ask him to make a brand new Bill ; he will always put it in the form in which that type of Bill goes.

Mr. Reid : I would not venture to dispute the legal position of matters, but I am quite sure that every beekeeper in this room would wish you to insert in paragraph (2)—" Every local authority shall appoint such **qualified** inspectors and other officers as may be necessary." If you put in the word " qualified," or " properly qualified," then I think the objection would be met. Any legal questions I do not wish to introduce. I would not, in one of the remaining clauses, call a Minister a Ministry ; I would call a Ministry a Ministry ; I think to call a Minister a Ministry ——

The Chairman : We will have that point at the end ; that we need not discuss. You will see, in line 5 of Clause 2, you have got a governing phrase—" the Ministry or the local authority,"—that applies throughout. I do assure you—I am speaking about that with a lot of experience—I would rather remove the Ark of the Covenant than try to alter a legal term. You cannot get your men who are responsible for drafting Bills to put a thing in a simple and straightforward way that a common person like myself would like.

Mr. Reid : May I remind you that the Ark of the Covenant was ultimately destroyed absolutely ?

Mr. Bold (Lancashire) : I should have said the very same words as the last speaker, but I was relying on paragraph (3) " The appointment of an inspector shall be subject to the approval of the Ministry."

The Chairman : I think you may take it that the Ministry, after all, under this Bill will have the powers ; the Local Authority will only be its delegate, and the Ministry will only appoint a delegate when it decides to. At present it does not intend to delegate its powers.

Mr. Bold : Of course, the Ministry would not sanction the appointment of anyone who was not a beekeeper to come and inspect our hives. That is the point. If the Ministry gave that assurance there would be very little objection.

The Chariman : We have given that assurance.

Mr. Harwood (Middlesex) : May I ask you to overcome your diffidence and give me and the meeting generally an interpretation of this part of the Bill ? Section (3) reads : " In any proceedings under this Act, no proof shall be required of the appointment or handwriting of an inspector or other officer of the Ministry or of the clerk or an inspector or other officer of a local authority." Is it a question of the meaning of the word " proceedings," because later on I see, " An inspector of the Ministry or of the local authority may for the purposes of any Order under this Act at any reasonable time, enter any building or place wherein he had reasonable ground for supposing that there are or have recently been bees affected by any pest or disease, or that any Order under this Act has not been or is not being complied with, and may examine or cause to be examined any bees, honey or comb on such premises and anything thereon used for or in connection with bees " ? Is the point " for inspection " ?

The Chairman : " Proceedings " under (3) simply means legal proceedings, police court proceedings, or whatever it may be. That again is common form, to obviate having to prove in court you wrote something which you wrote.

An Hon. Delegate : In regard to paragraph 2, " Orders for preventing spread of bee disease " : I am an expert at Cambridge, and in going round one has had a few expert's experiences this year. There was a case in point bearing on the paragraph : " The Minister may make such orders as he thinks expedient for preventing the spread in England and Wales of any pest or disease affecting bees, and any such Order may direct or authorise the destruction by the Ministry, or the local authority, of any colony of bees so affected, and any receptacle (other than a serviceable movable comb hive) in which there are or have been bees so affected, and the contents of any receptacle which is being used or has recently been used for bees so affected. The Minister or Local Authority may in respect of anything so destroyed pay such compensation as the Minister or Local Authority may think fit." One would think a stock of bees very bad with disease would gather no honey. I saw a stock diseased with the worst form of foul brood ; a strong stock. I decided to leave it alone rightly or wrongly. That stock gathered 185 lbs. of honey. If that had been destroyed, what compensation should have been given ? I suggest to you that you should consider it, because it would have been a loss to the country had that stock been destroyed. I may say from my own experience—we destroyed a stock in the autumn—it is a thing the Ministry should consider, this question of compensation.

An Hon. Delegate : On behalf of the Cambridge Beekeepers' Association, may I ask what are the proposed qualifications for an expert ?

The Chairman : Really, that is worth a written question ; if you will put it in writing and send up it to the Ministry, they will be able to consider it. I suppose a competent knowledge of his work. A man must have been a practical beekeeper, he must have kept bees, and he must have a working knowledge of the conditions under which bees live. He can have any other knowledge you like. I do not think I could answer it more than that.

The Hon. Delegate : The reason I asked the question was because a few years ago a practical beekeeper well known throughout the country, with first-class and other certificates, a producer of a large quantity of honey, took a quantity of diseased bees in hives on to a piece of ground about half a mile from a very large beekeeper. That rendered beekeeping absolutely impossible in that district. The point arises : If a man with all these qualifications can go and condemn another man's bees, and is incapable of managing his own, his qualifications are not much use.

The Chairman : Surely it is not uncommon that a high degree of skill goes together with an extraordinary amount of stupidity. One might hope that does not occur regularly. Many of us are extraordinarily stupid sometimes, but we might rely on the Advisory Council or Committee of Practical Beekeepers to petition the Ministry not to renew the appointment of that gentleman, if he did these things.

I think the time is getting late. I would ask if there are any other suggestions in relation to the considerations before us that any member of this Conference desires to put.

Mr. Snelgrove : If this Bill ever becomes an Act, and the Ministry have to administer it, I for one, and I think I am voicing the opinions of the meeting, hope that they will not do it in a half-hearted sort of way. (Hear, hear.) A remark of Captain Wellington's rather alarmed me. He spoke of trying to do all this by persuasion first. Well, we have all experienced the effects of persuasion, and we have been waiting so long for this Bill that I am sure we all hope, Sir, that whenever the Ministry do it, they will do it with the greatest possible vigour. (Hear, hear.)

The Rev. Mr. Morgan : I think it was understood, at least I understood it in that way, that it was persuasion first ; compulsion afterwards. In the past we have had persuasion ; now we need compulsion. Compulsion comes if persuasion fails.

Mr. Frusher : I can give you an instance of some hives standing from 1914 till last March, in a neighbourhood where they cleared all the bees off, and they would not remove them by persuasion, nor yet sell them.

The Chairman : Well, that is a case for compulsion. Well, Gentlemen, there is no more business before the meeting.

An Hon. Delegate : I should just like to remark that, so far as I know there is nothing in this Bill to hint that skeps are not advisable. I do not know how you would deal with those. An inspector comes across a lot of skeps he cannot inspect ; what is he to do ? There is no guidance, so far as I know, in this Bill. What compels me to speak, more than anything else, is an assurance from Captain Wellington that this Bill is going to be carried out in rather an easy manner, at any rate to start with, and we really shall have something going forward. I do want to know what is to happen about the skeps.

Mr. Reid : May I make one remark, Sir, before we part ? We have had a very interesting meeting here to-day, we have had a chairman who has conducted our business with very great ability and courtesy—(cheers)—and I would ask you, if the chairman will permit me, to give a hearty vote of thanks, from this conference, to our chairman, Dr. Keeble.

Mr. J .B. Lamb : Mr. Chairman, ladies and gentlemen, Mr. Reid rose to do what I was going to do one minute ago—I second it—to ask this meeting to thank you very sincerely for your able conduct in the chair to-day. I assure you I have attended hundreds of meetings, but I do not think I have come across one chairman who possesses such a super-abundance of tact and patience, and combines so admirably the **suaviter in modo** with the **fortiter in re.** Although I came half expecting ructions, I think the fact that we have not had ructions is due entirely to your tact. May I also associate with you Captain Wellington, who, so very clearly explained to the meeting what is comprised in about four pages of foolscap ? (Hear, hear.) I will now second the resolution, and put it to the meeting ; is it your pleasure ?

The resolution was carried by acclamation.

The Chairman : Ladies and gentlemen, the fact that I came to this meeting at a very great personal inconvenience, and from a long distance, makes it all the more agreeable to find, that, in spite of the journey, the conduct of the meeting has met with your approval. The reason why Captain Wellington asked me to represent the Minister and preside at this meeting was a very simple one. During the years of the war , when I was at the Ministry of Agriculture, I set myself one task, which I believe is a real task, and that was to smash altogether the idea that a Ministry represents a governing body issuing edicts, to be obeyed by those persons to whom they were addressed. Instead of that we have now got, in all matters relating to horticulture and to intensive cultivation, a concordat between the industry and the Ministry, which is enabling us to do rapidly what we could not do, even with great delay, before, and I hope that, as the result of this meeting, you and I may now look forward to the time when beekeepers will not disagree with one another, there will be found a common measure of agreement, and that you will all help to make this industry what it deserves to be, a very general and a very successful one. (Cheers.)

(The Conference then terminated.)

The American Bee Journal.

FERTILISING DRONE EGGS.*

By Will H. Gray, British Columbia.

I find the article by Gilbert Barratt on fertilising drone eggs particularly interesting, becuase it appears to disprove that which Dr. Phillips has so consistently maintained both in his book, " Beekeeping," and also in his California lectures, namely, that the sex is determined before fertilisation.

I quote from his book, page 188 : " It seems clear, however, that the statement of Dzierzon that all the eggs in the ovary are male eggs cannot be accepted, and it is, in fact, not improbable that the eggs destined to be female die for want of fertilisation, while the eggs destined to be males, not requiring fertilisation, are capable of development."

Now, if that were so, fertilising a drone egg artificially would not make a female of it. So if Gilbert Barratt's experiments are correct, as I have no doubt they are, then Dr. Phillips will have to modify his theory.

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* THE BEE WORLD, Dec. 1919, p. 141, and **The American Bee Journal,** Dec. 1919, p. 415.

Dr. Phillips attached a good deal of importance to the fact that bees did away with the eggs of a drone layer. To me this does not seem so very important, as I know bees will remove eggs of a normal fertile queen if they cannot look after them.

The bees can probably tell whether an egg is fertile or not. And in the case of a drone larvæ they probably get disgusted at seeing nothing but drone eggs, especially if they are in worker cells, and consequently eat them up sooner than raise useless stunted drones.

Gleanings in Bee Culture.

HOW TO GET RID OF DRONE COMB.

By J. E. Thompson, Medina, Ohio.

In the elimination of drones, I have observed three principal causes of the bees building drone comb at the sides of the frames : (1) Whenever the foundation is not imbedded properly, but becomes separate from the wire, the bees promply cut it away, as they will not allow a space between the wire and the foundation. (2) Also drone comb results whenever the foundation is imbedded too deep, so that it is weakened. (3) Further, if foundation is given the bees when no honey is coming in, they cut below and above the wire, and thus gradually make holes.

I overcame the excess of drone comb by daubing a little hot wax about two inches of the two lower wires at the corners. This covers the wires and braces the foundation. I have used thousands of such frames of foundation. My frames are wired with five wires, and the lower wires daubed with wax. Four wires are placed as in the ordinary way, and the fifth wire is half-way between the upper two. This braces the weakest part of the comb.

The Domestic Beekeeper.

SPRING MANAGEMENT.

WEAK COLONIES.

By H. W. Sanders.

Every beekeeper gets these sometimes, the specialist, despite his care, through accidental causes, and beginners, through preventable causes. If bees have wintered poorly, either for want of protection from cold, poor or insufficient food, mice in the hive, or through having gone into winter quarters short of young bees, they will be weak in Spring, and every beekeeper knows how difficult it is to build them up to a point where they can do effective work in the supers. Dr. Miller relates having united seven of these poor clusters into one, only to find it soon as weak as any of the seven, and it is a curious thing that uniting very weak colonies has very little effect. The reason seems to be that the bees are old, and it is well-known that old bees cannot feed brood the same as young ones. Therefore the aged bees that are given to the colony die off faster than the brood emerges and soon they are back at the starting point again. A better plan seems to be to unite each weak hive with a moderately strong one, and at the same time try to spare a frame with a little brood from another stronger one, to add to the re-inforced colony. This seems to answer very well, for the new colony thus formed will maintain the heat of the new brood nest, and in three weeks young bees will begin to emerge in time to replace the older bees as they perish.

This is all right where there are a good many strong and medium colonies and only a few weaklings. When all the colonies are weak, a different procedure is to be attempted. This consists of leaving them all alone for the time being, except only to give all the protection possible, to contract the entrances, and when the weather has warmed up so that bees fly every day, to go around and break the cappings on some of the sealed honey. This will cause all the more vigorous ones to breed up rather faster, and now they should be helped by combs of brood taken from the weaker colonies. The natural impulse is to take from the strong to help the weak, but the secret of success is to do exactly the reverse and to take from the weak to help the strong. Within a couple of weeks the colonies thus helped will become really strong, and go right ahead, and just as they are about ready to swarm we change their places with the weak colonies. All the flying bees now join the weaker swarm, which from this point goes ahead rapidly, while the parent colony now upon a new stand loses so many bees that it does not swarm. Finally when the honey flow begins in earnest, both colonies will be just about ready to make the best use of it.

The California Honey Bowl.

INTRODUCING QUEENS.

By The Editor.

There are so many plans that have been given pro and con for 40 years or more that we old timers seem to be content with any system that best presents itself as we operate the colonies.

If you use the candy plan which is to allow the bees in the hives to eat one way and the bees in the cage the other, until the candy is used out of the way, then the queen and bees in the cages walk out into the colony and are usually accepted. The bees from the hive being superior in numbers usually force their way into the cages first and fill the cages full of bees. If the bees that enter the cages from the hives do not sting, ball or kill the queen at once, she is likely to go unharmed.

If the cardboard is removed from the candy end of the cages as cages are placed in hives, the bees will usually release the queen in from 12 to 48 hours owing to conditions inside and outside the hives. If colonies have been queenless 3 or 4 days, moving the card from the candy end of the cage is all right. If the new queen is put in as the old one is taken out, better leave the card on, but if the card is not narrow enough to expose a little of the candy you had better make it so that the bees can get at and taste the food, so they will keep gnawing the card away till they can get through. If no candy is exposed the bees may not eat through at all. This is a slower and a safer plan.

Queens are harder to introduce to colonies with unsealed brood than when brood is all sealed. Quiet laying queens can many times be turned loose on combs and be received O.K. if colonies have been queenless long enough that their brood is sealed.

The Beekeepers' Item.

NEVER TOO OLD TO LEARN.

" Never Too Old To Learn " is an oft-repeated phrase that applies to beekeepers as well as any other class of people. Especially is this true because beekeeping has made such strides of advances in improved methods and application.

It has been possible for some beekeepers to keep quite well abreast of the times on account of their fortunate situation that enables them to obtain, through beekeeping literature and otherwise, a vast store of knowledge on the subject of their chosen pursuit. But even this knowledge may not be as thorough and definitely impregnated upon the mind as proper, systematic schooling supplies. Experience and self-education is a valuable school but, after all, like Josh Billing's old saying, " the tuition comes mighty high."

The Western Honey Bee.

LIMA BEAN HONEY.

By M. H. Mendleson.

Lima beans require considerable moisture for the best production. That which would produce a partial crop of beans would not be sufficient to allow the secretion of enough nectar to winter the bees in good condition, as 33 years experience has proved to me, as I was the first in this State (Ventura) to move into the bean fields exclusively. I have studied the question in all its phases—the planting of beans, their advancement to bloom, the secretion of nectar, and the curing of the honey.

To produce bean honey of the best quality in both flavour and body, the hives should be crowded with bees and the entrance contracted to 5 or 6 inches. The honey should be capped over thoroughly and be taken off as soon as evaporated. No more space should be given the bees than they will cover, or the honey will draw moisture and sweat through the cappings—for bean honey appears to draw moisture more easily than the sage honey, and it ferments, ruining its flavour and body in a very short time.

Lima bean honey, when well capped and ripened, has a rich flavour, and in this State I consider it equal to any Eastern white clover honey, for it then has a similar flavour. A well-ripened Lima bean honey, in its candied state, has no superior ; and the most of my individual customers prefer it in this condition.

Where the Limas are all planted at one time, the honey flow only lasts from a week to ten days. Then, as the first pods are forming or advancing in growth, the secretion of the following bloom lessens to a trifle more than the brood consumes.

During the first flow, the bees crowd out the brood chamber with surplus honey ; and during this time I like to have my foundation drawn out, and to have first class comb drawn out in the brood chamber, by alternating one to three or more sheets of foundation, according to the strength of the colony. When the foundation is drawn out, I lift them to the super to be finished to the bottom bar, and then I get perfect combs. During the first week or ten days of the flow, the queen has no chance to lay in the new-drawn foundation, but as the flow lets up she will lay in the new comb wherever vacant.

The Canadian Horticulturist & Beekeeper.

A TEST OF ALUMINIUM HONEY COMBS.

By J. J. Lemire, St. Isidore of La Prairie, Que.

It was in November last that I first heard of the artificial combs made of aluminium which are claimed to increase the production of workers and limit the number of drones. These combs have been invented to control the sex of bees. It is true that the bees hesitate to work right away on this metal, but this hesitation lasts no longer than a few hours. These combs, for a swarm, artificial swarm or for an ordinary colony have their good points. The feature of this invention is that it relieves bees of the necessity of building wax combs, and thus enables them to devote their energy to honey making. The queen bee does not wait till the cells are built up to lay her eggs ; the cells are already made exactly like wax. There is a little hole at the base of each cell and the first work of the bees is to plug these holes with wax. It takes about three or four hours to have that work done. Being of metal construction the combs will not melt in excessively hot weather. Furthermore, in the event of infection occurring in the brood the cells may be thoroughly sterilised. It is more profitable for the keepers of bees to market only extracted honey, and thus increase production by re-using the combs because in sections you are selling your wax at the price of honey. The new aluminium device, therefore, seems particularly timely. They may be used indefinitely ; they are of the ordinary standard (Langstroth) size and they don't weigh any more than wax combs ; their weight is about four ounces each.

The cells consist of aluminium strips ; ribbons which are shaped by being passed between crimping rollers. By making the honeycombs double depth, they cannot be used for brood rearing. The brood combs for the production of workers are supplied with cells $\frac{3}{16}$ inch in diameter. Since it is impossible for the bees to enlarge the cells, only females are produced in them.

A special brood comb with cells $\frac{1}{4}$ inch in diameter is provided in which the queen bee may lay eggs for drones. This arrangement not only makes it possible to control the proportion of male and female bees, but also permits the blood control so that excessive inbreeding is prevented.

Before we placed these aluminium combs in the hives they were sprayed lightly with wax. Early in July I took a large swarm and shook it into a hive containing two aluminium combs and 10 sheets of foundation. Forty eight hours later I looked and all the holes at the base of each cell were well plugged up, the queen had laid eggs in the two aluminium artificial combs, filling about two-thirds of the cells in each of them and the bees had started the foundation. Pollen and honey was seen in the artificial combs. I consider that in shaking a weak colony on the aluminium combs that in 25 to 30 days you will have a strong colony of bees. If you have some colonies with foul brood you can shake them on to starters and by starving them for four days and then re-shaking them on to aluminium combs, it is sure that every colony will establish itself successfully and the hive will be full of healthy brood. Forty-eight hours after shaken, eggs will be found in every colony including honey and pollen. Any beekeeper will concede that if these practically starving bees had been shaken on to foundation, it would have been a week before sufficient wax could be produced and combs drawn to permit the depositing of eggs and then only a limited number of cells could be used by the queen bee. It is obvious from these successful experiments that the use of the aluminium honey comb gives promise of a more rapid elimination of American foul brood without the consequent loss of bees that has always attended the shaking method of treatment.

In using these aluminium honey combs it saves the labour of preparing foundation, saves the bees' energy in drawing combs and saves the honey used in secreting the wax to make the combs. When it is considered that the bees expend as much energy in making a pound of wax as they do in gathering 20 lbs. of honey, the potential value of these artificial combs apparently should prove to be considerable.

The Australasian Beekeeper.

ARTIFICIAL SWARMING WITH SAFE INTRODUCTION OF QUEENS.

By J. W. Patterson.

In writing this article I don't pretend that the system is original. It is based on methods advocated by the late E. L. Pratt, "Swarthmore." The reader can vary the details to suit himself and, by observation, verify or otherwise, the statements contained herein.

Many of the methods of increase of colonies, taught by the various text books, result in loss of thousands of future workers in the colonies divided. As soon as you cage or remove a queen from her brood combs, fully 30 per cent. of the larvæ and most of the eggs are removed by the bees. This loss is not noticed immediately but shows up in about a month's time, consequently increase by dividing the brood combs and making two colonies spoils a strong colony without any compensating advantages. Prepare a number of boxes to hold, say, five frames and a bit over. Make them an inch deeper than a standard hive body, nail the bottom board on, any light stuff will do, and an add crack will not matter ; nail a cleat at each end underneath ; provide light covers that you can slide on and nail quickly. Bore a $\frac{3}{4}$ or $\frac{7}{8}$ hole low down one end for a flight hole, and fit with a tight cork ; about mid-way in the other end of box bore out a $2\frac{1}{2}$in. hole (an expansion bit is the best for this), nail fly wire inside, and outside a piece of light stuff to swing open on one nail and stop when closed against another. Provide one well-wired tough comb of honey for each box, if weather is hot hold it under the tap and fill any empty cells with water, and four frames with starters, or full sheets of foundation ; fit each set of frames carefully, preferably nail $\frac{1}{2}$in. stops against side for the combs of honey first, and provide a bar to jam the five frames immovable in the box the surplus room over the number of frames is necessary. Provide one or two thin division boards as well.

You are now ready to stock your boxes with bees. Start as soon as the morning is warm on the colonies that are getting over populated with bees. Your colonies noted for unlimited brood rearing, and limited honey production will be ideal for the purpose. Remove your bar jamming frames together and one frame, hang the light division board in place against the next frame and slide the cover past over this. Before shaking in the bees it is a safe plan to find the frame the queen is on and stand it outside the hive. Now proceed to shake in as many bees as you consider will make a fair swarm, or as many as the colony will stand, you can shake from as many hives as you like into one box ; they will not fight, nor will it be detrimental to the prosperity of the swarm. Some colonies can space enough bees for three swarms ; as soon as you have enough bees in, whip out the division board quickly, put in the frame and stick to jam the lot together, and nail your cover down safely. Make sure the ventilation is open and put the box in a cool place, a dark place preferably.

When your boxes are all stocked with bees, and provided you have been careful, they will be the equal of prime natural swarms, and by evening, in six or eight hours, you can safely run in any queen, virgin or laying, without any risk of losing her. As soon as you have run in the queens load up your boxes and take them to another site, at least two miles away if possible, open flight hole and close ventilation. After a few days they can be brought back, lifted into standard hives, and the same procedure gone through again. A beekeeper with two or more apiaries can use this method and have no useless travelling, and the boxes are always handy for other purposes about an apiary. This is a safe way to introduce virgins received through the post, and a sure way of providing for queens within a few hours at any time, providing the weather is at all favourable, and a little honey and pollen coming in.

I find the best way to run queens into these swarm boxes is as follows : Make up cylindrical gauze cages, about 1 in. in diameter, fit a cork to each end, open your mailing or Tit-off cage in front of a window and let the queen go on it. Take a cork out of one end of your cylindrical cage, and put çage over the queen, she will soon run into it, cork her in, take your cage to a swarm box, pull out a cork and hold end of cage on the box, beside the corked flight hole, have your smoker handy, and as soon as she is heading for the box, pull cork out of the flight hole, slide end of cage over it, one puff of smoker and the queen is in, cork up flight hole quickly, and if you have watched your chance not a bee will escape, and your queen safely run it without handling her.

I have endeavoured to make this article clear and have tested the method advocated with success and welcome criticism. There are many ways of increasing colonies, good and bad, as soon as you remove brood combs from a queen for however short a time you are losing. Even put above an excluder is just as bad; of course it may prevent swarming, but if swarming was the beekeepers' worst trouble the going would be pretty good.

The New Zealand Fruit Grower.

MATURING HONEY.

By I. Hopkins.

Among the requirements for raising extracted honey on a commercial scale one must have one or more honey tanks, and the shape of these, in my opinion, depends much that is often overlooked in getting the honey into the best form preparatory to putting it into marketing vessels...... However fine the strainer may be that receives the honey from the extractor when passing into the tank, grains of pollen and minute particles of wax will also run through, and until these are separated from the honey, the latter is not in its best condition. If allowed to remain in the tank without being distributed for a couple or three days the foreign matter will rise to the surface, when it can be skimmed off.

This process I have termed "maturing" honey, and in order to accomplish it thoroughly, and in the shortest time, the tank or tanks should be shallow and broad, and if divided so that one, or at most two days' extracting can remain undistributed, so much the better. It is a great mistake to have large and deep tanks to hold several days' extractings, the frequent disturbance, together with the deep body of honey, are against its proper maturing; honey tanks should not be more than 24 in. deep.

The New Zealand Beekeepers' Journal.

QUEEN-CELL INCUBATION.

By Y. H. Benton.

No doubt many of our readers, when rearing large numbers of queens, have felt the need of an efficient nursery for their queen-cells. The method in vogue at present, for want of a better one, is, to say the least of it, "a crude one."

The use of nursery cages in frames entails the expenditure of much labour and time. For instance: to safely cage 100 cells, four frames of nursery cages are required; at least two colonies have to be interfered with to supply the necessary heat during incubation. These colonies have to be repeatedly opened up until such time as all the queens have hatched. When taking them out, each and every cage has to be carefully brushed free of the adhering bees, all of which takes time, and time in handling cells or young queens means the risk of chilling them.

Necessity is the mother of invention, and I could not labour under present-day methods of queen-cell incubation without trying to improve on them; hence, after many days thought, I have perfected an invention which I believe will be a great boon to beekeepers generally.

I am aware that poultry incubators are in use in England and America as cell incubators, having been adapted for that purpose; but the use of heat derived from a kerosene lamp does not appeal to me, and I am determined, if possible, to work in collaboration with Nature and make use of the heat generated within the hive to further my ends, the final result of my labours in this direction being beyond my most sanguine hopes.

While the incubator is so designed that it can be placed between two hive bodies full of bees, cells can be put into and taken out of the incubator without opening up or in any way interfering with the colony which supplies the necessary heat. This I think is the main feature of the invention; another is that a ten-frame size incubator will hold 102 cells comfortably. I have tested the incubator with large batches of cells......and found it work very satisfactorily, even though the nights and several days have been cold.

[Mr. Y. H. Benton is evidently not aware of the introduction in Great Britain, over two years ago, of the **Brood-Hatching Chamber** which is now playing a prominent part in restocking work. The Central or **Incubating Compartment** of this chamber is intended not only for incubating worker brood, but also for incubating queen cells, whether in test tubes, on frames with suitable large cell-protectors (which cover also stores of honey and pollen to which each cell should be pinned), or in any other form of simple and convenient accommodation with full regard to adequate early feeding of the hatching queens. For instance, nothing short of **honey-pollen candy** should be utilised when the test tube method of incubation is adopted.

Several types of brood-hatching chambers were considered when the appliance was introduced. One included a hinged back shutter for the incubating compartment so as to facilitate queen incubation without opening the hive in the usual way. But the introduction of the **water bath method** for incubating queen cells has led to the supersedure of the **B.H.C.** in this sphere of ulility—Ed.]

The British Bee Journal.

REVOLUTIONISING BRITISH BEEKEEPING.

By I. Hopkins.

I never hinted that the industry of commercial beekeeping in England would be carried out on so extensive a scale as in this Country (New Zealand); but what I have said, and still maintain, is, that you are not getting as much out of beekeeping as you would were the like energy and push exercised by British beekeepers in taking action to bring about improvements as has been and is still the case with New Zealand beekeepers.

Mr. Manley's condemnatory remarks on British beekeeping.... are, so far as they go, a repetition of mine on different occasions. Untravelled Englishmen are, as a rule, too conservative to adopt new ideas, hence many purely British industries in the past have been lost to foreign nations. The same applies to beekeeping; so, Mr. Manley, don't blame the climate altogether for any shortcomings until you have done your best to improve the existing conditions.

Bee Craft.

BEEKEEPING IN EGYPT.

By W. H. Round.

An Egyptian beekeeper's life is not all honey. From a native hive he may obtain, at the utmost, 14 lbs. of honey each year. His bees have to contend with hornets from July to December. During this time brood-rearing almost ceases, and the bees are afraid to leave the hives, as the hornets are waiting to devour them.

At the present time the bees at the Ministry of Agriculture are suffering from the attentions of the small bee-eater, a beautiful bird, a little smaller than the English starling, with bright green plumage, tinted with bronze under the wings. These birds wait near the hives and greedily snap up, on the wing, the tired bees returning home.

Altogether the beekeeper's life in Egypt just now (early February) is full of trials. Fortunately, better things are expected soon. Warmer weather is anticipated in the very near future, when brood-rearing of all kinds will be started with renewed energy, and with the fruit trees in bloom and clover to follow the bees will respond with greater efforts until once again the hives resound with the hum of thousands of bees, and the honey vats will be filled to overflowing.

The Beekeepers' Record.

PREPARING FOR HONEY SHOWS.

In the press of other work, preparations for the various shows must not be forgotten. There is nothing like competition to bring out man's best efforts, and even if premier honours are not won, valuable lessons will be learned. There is growing competition with honey from other countries, not perhaps so much in quantity as quality. There can be no doubt that the honey we import is steadily improving, although possibly the greater bulk of it is not, to put it mildly, table honey. Beekeepers in other countries are alive to the fact that to find a ready market and good prices for their honey it must be good, and put up neatly and cleanly. The same rule applies to the Show bench ; the honey must not only be of A.1. quality, but it must be put up in an A.1. manner. Numbers of times we have had to pass over good honey on the Show bench because it was put up in a slovenly, lipshod manner ; the same faults will go against a ready sale and good prices.

The Beekeepers' Gazette.

THE MERCHANT, THE BEEKEEPER AND THE PRESS.

Materials are scarce and difficult to procure. Occasionally our advertisers are quite unable to supply the goods, or all the goods, ordered ; in which case readers feel aggrieved and sometimes state their grievances with vigour. As a result, some firms hesitate to advertise. They say : " We are more than booked up in some particular lines ; we do not at present need to advertise ; your readers are impatient with us when we cannot supply all their needs." Out friends should bear in mind that advertising is the mainstay of all publications, and that without a free support by advertisers we should have to treble, or quadruple, the price of our papers, or go out of business altogether—which they would not like us to do. In their own interests, as well as in ours, they should abstain from discouraging advertising, and advertisers should maintain their position by publicity. A regular, continued advertisement, as compared with spasmodic advertising, is of hundred-fold more value than the extra cost would seem to imply. The other day a tourist-agent, addressing the Isle of Wight Chamber of Commerce, said that when they started their London hotel they advertised at the rate of £80 a week ; and, although they had turned away 800 people in one day, they still continued to advertise, because it paid to do so. That is sound business.

We confidently appeal to our readers everywhere to place all their orders with our advertisers, and to mention our papers when doing so. It is due to themselves, to us, and to our advertisers who enable us to keep the papers running. A glance at our advertising columns will show that all a beekeeper's requirements are provided for, from Dutch Bees to Artichokes, from Hives to Jumpers.

The Irish Bee Journal.

LARGER WORKER-CELL AREAS.

When larger frames and larger hives are being advocated and lists by the leading firms of appliance makers appear with offers of frames 16″ × 10″, and hives to take them, we recall having recommended larger hives many years ago and having, to some extent, seen them in being in the " I. B. A. 1909." But these were intended to accommodate, not larger frames, but a larger number of frames. We were even impudent enough to condemn the British " Standard " frame as too small, but it held the field, or the apiary, or the imagination, in force too strong to be disturbed ; to introduce a new size would mean to introduce endless confusion, might even mean the scrapping of costly machinery, and was not to be thought of.

It seems that what was unthinkable in those days is being thought of now. If we may judge by our correspondence, there are many practical beekeepers contemplating the purchase and use of the 16″ × 10″ frame. We are far from discouraging them. The stick-in-the-mud policy never commends itself to us. But there are others who are hesitating—without being lost, and these might wisely consider whether they are making the best possible use of the frames which they have.

Gardens and Allotments.

NATURE NOTES.

Speaking of wasps and bees, one is reminded of the oil beetle which emerges at the end of the month (March). The creature itself may not attract much attention, but its history is one of the most astonishing in the annals of insect life. The mother beetle is apparently quite indifferent to the fate of her offspring, for she just drops her eggs any where on the ground. The young ones, as soon as hatched, at once scramble along until they come to a buttercup or some other flower, and, climbing to the top, they wait patiently until a bee alights thereon, when the young oil beetle clutches hold of her leg and is carried away to the hive. Here it quickly makes its way into the cells, devours the young bees and afterwards subsists upon the food the workers have stored up for their own kind.

Bienin=Vater

MOVING STOCKS WITHIN THEIR FLIGHT-RANGE.

This can be done at any time, if we take steps to ensure that the colony takes note of the fact that it has been moved (p. 6, quoting **" Schweitzerische Bienenvater,"** a well-known Swiss bee book). Make the bees fill themselves with honey, shake them into a swarm box without combs for the journey. Do not let them fly at once when they are placed in their new quarters, but keep them confined till next morning, and put on a feeder in the evening. Next day they can be allowed to fly. It is said that a whole apiary can be moved in this way.

INOCULATIVE FEEDING FOR BROOD DISEASES.

Dr. Burri, the well-known bacteriologist, has been experimenting with M. Prudhomme's foul-brood preventive solution [see **B.B.J.,** 1919, p. 94]. According to the **" Bulletin de la Soc. rom. d'Apiculture,"** quoted p. 6, Dr. Burri found that the " cure " did not kill bacteria, but did kill bees ; one more proof, adds **" Bienen Vater,"** that bees are more susceptible than bacteria to the action of disinfectants.

THE BRITISH FRUIT CROP AND I.W.D.

Franz Richter states (p. 5) that, according to several English bee papers, the fruit crop, especially apples and pears, has been reduced in the same proportion as I.W.D. exterminated the apiaries throughout the country. He goes on to refer to our importation of Dutch bees, and to quote the **American Bee Journal,** which doubts whether our choice was a happy one, " since the Netherlanders keep bees mostly in small skeps, and in consequence get swarms weighing barely two pounds. In correspondence with the small skeps, the Dutch bee has the swarming fever as badly as the heath bee." [The " heath bee " is the brown bee kept on the moors of Lüneburg, N. Germany, and famed for its swarming tendencies, which the Lüneburgers encourage, as they keep bees almost exclusively in skeps].

THE MATING FLIGHT.

An interesting account of this is given (p. 8). " Shortly after 2 p.m....we heard an extraordinarily loud humming of drones and saw quite a number, about 8 or 10, of queens out for their mating flight. We observed that the drones swarmed closely round the queen ; often it appeared as though a comet with a tail were moving swiftly horizontally, but for the most part the cluster was funnel-shaped, with the point either up or down, according to the direction in which the queen flew. When the cluster was densest it dropped quickly till close to the ground, then broke up, but re-formed again at once on rising. This was repeated several times ; then, after falling several times very quickly , the cluster dissolved entirely. On that day none of the clusters fell quite to the ground. Some of them came within arm's length of us, close in front of our faces ; they did not rise more than 6 to 8 metres from the ground, nor fly (with one exception) more than 10 to 12 metres away from the apiary. After about 15 minutes quiet supervened remarkably quickly. On the next day I saw the occurrence again at the same hour, but I only saw three queens fly, of which one, with a number of drones, fell quite to earth ; on my approach she freed herself from the drone and flew up from the ground towards the apiary. I saw her then run into a stock, showing signs of having mated." The date was the 17th August, and the weather was hot and steamy, a good nectar day.

THE WINTER DEPOSIT ON THE FLOOR BOARD.

German beekeepers use hives with a fixed floor board and removeable back, and are in the habit of placing a sheet of oiled paper under the frames in winter. An article by Dr. Brunnich, of Berne (p. 13), discusses the information to be gained from observation of the deposit on this paper. Many dead bees signify that the colony has had no chance of a flight for a long time, or that the stock went into winter quarters with too many old bees. " The longer-lived dark bee has fewer corpses than the short-lived Italian and the former therefore comes out of the winter stronger." The dead bees should be dry, not swollen, else we may suspect dysentery. By sorting them into lots of different colours we can determine the inheritance of colour in the stock, and thus control selection. Their position on the paper shows the position of the cluster.

A large amount of cappings and rubbish indicates a large consumption of stores.

Eggs are also sometimes found on the paper. A drone-breeder has been known to drop an enormous number of eggs towards the approach of spring. Old queens in any case usually drop a few.

THE BEST RACE OF BEES.

As far as the reviewer's reading goes, German and Swiss beekeepers seem to be of one mind on this topic. **The best race is, for each district, its native race.** This is once again insisted on in "**Bienen-Vater**," p. 15. "Need we send for queens, reputed the best, from Switzerland, Holland, Norway, America, etc.? Is it certain that these, even if first-class **there**, will be and remain better than our best in the conditions **here**? Scarcely! Therefore let us cultivate and improve our own well-tried race, and breed from the best stocks."

THE INVENTOR OF THE EXTRACTOR.

Franz Edler von Hruschka was born in March, 1819, and an account is given of his life (p. 33) "for his 100th birthday." He entered the army, his father's profession, and rose to the rank of major, retiring in 1865. In the same year he placed his invention before the fourteenth itinerant meeting of the German, Austrian and Hungarian farmers, at Brünn, for which he was awarded the highest prize of the exhibition. V. Hruschka died in 1888 at Venice. His original extractor is kept in the museum of the **Austrian National Beekeeping Association.**

THE COCOON OF THE BEE.

It appears that Swammerdam's assertion, that the bee-larva makes its cocoon all at once, after being sealed, is incorrect; even Swammerdam recognised that the walls of the cocoon are different from the cap portion. Ludwig Arnhart, working in the laboratory of the **Austrian Beekeepers' School** in Vienna (p. 35), has shown that the bottom and walls of worker and drone cells are covered by a thin chitinous layer, decreasing in thickness towards the mouth of the cell, which is deposited by the larva as it grows, being as exudation from its skin. After being sealed over, the larva spins a silken cap to the chitinous cocoon—or, more accurately, puparium ("Puppenhaüschen"). As the queen larva does not touch the bottom of her cell, her cocoon has no bottom; the cap is spun so as to leave a space between cocoon and capping, not, as in the case of the worker and drone, in contact with the wax. Later, however, the bees remove the wax capping, and seal up the cap of the cocoon. Why, is not yet known.

Those desiring further information are referred to Arnhart's paper in the "**Zeitschrift für angewandte Entomologie**," Vol. 5, pp. 231-251.

WINTER FEEDING.

On p. 40, the rather astonishing statement is made that bees can be fed with syrup (2 lbs. sugar to 1 lb. water) on days in winter **when they are flying.** The syrup is to be given during the daytime, warm in a rapid feeder. Small doses of syrup are to be avoided, as they stimulate breeding. The writer (J. Böhmer, one of the Styrian bee-lecturers) has done this for several years and had nothing but good results from it. [It should be noted that he probably keeps his bees in a bee house; also that the plan might not succeed in a mild climate like that of Great Britain].

POSITION OF THE LEGS IN A FLYING BEE.

A fully-laden bee holds her legs stretched forward and pressed together in "a prayerful attitude," while an empty bee carries them stretched out behind her, according to Franz Richter (p. 45); the object being to obtain the correct balance for flight.

DO YOUNG OR OLD BEES TRAVEL BEST?

A discussion in **L'Apicoltore** is cited, in which Asprea maintains, in opposition to C. P. Dadant (in the **Am. B.J.**) that young bees travel best when sent long distances with a queen (p. 45). "The subject is important enough for further experiments to be made."

EARLY BREEDING.

Owing to the severe winter conditions, German and Austrian beekeepers are careful to avoid strains of bees that are early breeders. A case is given (p. 47) illustrating how such stocks always have a heavier death roll; they are also of course more liable to get short of food. The stock described had a patch of brood as large as a man's hand on Jan. 3. [Note that December had been mild, according to the weather reports]. Many bees perished in trying to fetch water for the brood.

OBSERVATION STATION REPORTS.

Bienen-Vater publishes every month reports from some twenty-six or more stations. These comprise, change of weight of a hive on scales, temperature data, number of days when bees were flying, and of days with rain, snow, sunshine, and wind. A note is added, giving general information collected during the month. [It is a pity we have nothing of the kind in this country; the difficulty would be, however, to find a sufficient number of beekeepers who are seldom absent from home, and have also the necessary leisure.]—A. D. B.

L'Apicoltore.

WHAT A COLONY CONSUMES IN A YEAR.

In THE BEE WORLD for January an article by Mr. H. M. Stich, of Paisley, on the Domestic Economy of the Bee appeared, and in **L'Apicoltore** for March there is an article entitled "What a colony of bees consumes in a year."

The writer of the article in **L'Apicoltore** gives the following data, but unfortunately he does not state how they were obtained. As they may interest those of your readers who wish to confirm or controvert Mr. Stich's statements, I give them below:—

Total weight of Honey, Pollen and Water consumed by a Worker Larva	.4 gm.
Daily consumption of an adult worker ..	.003-.12 gm.
Daily consumption of an adult male	.04-.05 gm.

As an example, the article deals with the needs of a colony of 80,000 bees (max. population) with an average of 60,000 individuals, which population is renewed 4 times in the year, and, without giving the calculations **in extenso** as did Mr. Stich in THE BEE WORLD, appends the following figures:—

Maintenance of the Colony ..	182 kg.	(401 lbs.)
Rearing of Brood	32 kg.	(70 lbs.)
Secretion of Wax	4 kg.	(9 lbs.)
Total	218 kg.	(480 lbs.)

There is a glaring conflict between the figures given above and those deduced by your contributor. I have not the time to go into the matter, but on the face of it, I think that it is hardly probable that nearly 84% of the total food consumption is by the adult bees, whilst the rearing of nearly a quarter of a million bees from the egg, including the production of the eggs, represents only 1½% of the total food consumed.

I note that the food consumed by an adult worker bee is stated to vary between 3 and 120 milligrammes per day, and I take it that the higher figure represents a nurse bee's daily requirements. Here, perhaps, is where the author of the article under review goes wrong. Obviously if the bulk of the 120 milligrammes is ingested only for brood food secretion and not for direct digestion by the individual, then it ought to figure as food for brood rearing, and not, as I suspect has been done, included under maintenance of the colony.

(Apis.)

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Proceedings of Associations and Clubs.

The British Beekeepers' Association.

The annual general meeting and conversazione were held at the Central Hall, Westminster, on April 1. There was a fair attendance at the annual meeting, at which the chair was taken by Mr. T. W. Cowan. The minutes of the last annual general meeting were read and confirmed. The balance-sheet was then considered, and was passed as satisfactory. In considering the report for the year, the Chairman made the following remarks:—

AFFILIATED ASSOCIATIONS.

The number of Associations affiliated to us was 41 ; not quite as many as a few years ago, when there were 45 or 46, but many of these were small ones which have amalgamated, so actually none have been lost.

LEGISLATION.

You know that for some years bees have been dying owing to "I.O.W." disease, and we were not able to do very much. It has been found that the only way to tackle this is to have legislation. In 1895 I had the pleasure of introducing a deputation to the Board of Agriculture, but at that time we were not ready to go in for legislation. We are now all agreed to have legislation. You will be glad to know that the Ministry of Agriculture a few weeks ago convened a large conference of beekeepers, inviting two delegates from each Association and other organisations interested. The meeting was held at the Surveyors' Institute in London, and a resolution was passed in favour of legislation with but one dissentient.

The registration of all beekeepers will be a great help. In the case of an outbreak of disease we shall be able to send our instructors to examine the bees and advise as to what is best to be done. The Bill will shortly be presented to Parliament, and there is every probability of it being passed.

MR. SMALLWOOD.

In referring to the death of Mr. Smallwood, he was on the Council for many years, and we were all very sorry to lose him. He had done a large amount of good work for the Association, especially in regard to the accounts.

FINANCE.

Financial position was satisfactory. Income has been greater than last year, but expenses have also increased. Membership is still very small, and the subscription is only 5s. He appealed to those who could do so to give more than the ordinary subscription.

SHOWS.

As one of the judges of the Royal I was very pleased to see such a good show. The total cost of the exhibition was £49, of which £44 was subscribed, and as the Council has decided to again undertake the work, it is hoped that beekeepers will again subscribe liberally to the fund opened for this purpose.

EXAMINATION.

The interest is still kept up, and a large number of country members have passed the examinations.

INSURANCE.

There has been a satisfactory increase in the number of stocks insured, which indicates that we have got over the difficulties experienced for some years.

On the whole the report is very favourable. We are a society which always wants more money, and we are only restricted by the amount of our income.

Mr. Sanders proposed and Mr. Claridge seconded that the Report and Balance Sheet for 1919 be adopted and issued. Carried unanimously.

Mr. Kenwood proposed a vote of thanks to retiring officers. Seconded by Mr. Breach, who stated that the affairs were conducted in a very satisfactory manner. Carried unanimously.

Mr. Pearman moved the re-election of existing members of Council, with the addition of two new members nominated. Seconded by Mr. Burtt and carried unanimously.

The Secretary proposed a very hearty vote of thanks to Mr. Paulin for engrossing the examination certificates, and this was carried unanimously.

W.B.C. GOLD MEDAL

Mr. Cowan : I am very pleased to be able to present this to Mr. Bryden, who was the winner last year. It is the first memorial medal awarded since the war. I have much pleasure in congratulating Mr. Bryden and of presenting the medal to him.

Mr. Bryden suitably replied, stating that he had succeeded in winning the medal by following the lines laid down by the Association, and so well indicated in that admirable book on the subject written by Mr. W. Herrod-Hempsall. He hoped the medal would be in the family for many years by being handed down as a heirloom.

This concluded the business of the meeting.

A number of appliances were staged for examination by members, the model W.B.C. hives of Mr. Kenward coming in for a large amount of attention. An asbestos roof covering by Mr. Pinder, of Salisbury, queen rearing outfits by Mr. Meadows, and a patent super clearer by Messrs. Burgess, of Exeter, were also most interesting.

The Conversazione, at which there was a good attendance, was presided over by Mr. T. W. Cowan, and was opened by a very able lecture by Major C. C. Lord on "Diseases of Bees," which was listened to with marked attention, and several questions were put to the lecturer.

There was then an interval for a most welcome and refreshing tea, and advantage was taken of renewing acquaintances and examining the various exhibits. After tea the Conversazione was resumed, Mr. W. Herrod-Hempsall giving a lecture on "Queen Rearing and Methods of Increase." A number of questions were asked and answered, which brought a most interesting meeting to a close.

ANGOULÊME BEEKEEPERS' CONVENTION. *

22nd and 23rd November, 1919.

This Convention is organised, in connection with a honey fair, by the Société Charentaise d'Apiculture (France). At the last one in November, 1919, the following resolutions were passed :

Firstly. That the laws on adulteration of honey should be rigorously applied and that a law should be voted as promptly as possible that the term "honey" should be employed solely to designate the natural product of the bees.

Secondly. That research work on "foul brood" interrupted during the war should be undertaken again, particularly by the Government laboratories, in order to arrive at a safe treatment.

Thirdly. That the authorities should in the future show a more effective interest in French beekeeping and grant larger funds than in pre-war days.

Fourthly. That education in beekeeping should be given more attention at the Agricultural schools, and also at both the National elementary schools and those privately owned, and that demonstration apiaries should be established.

Fifthly. That three types of hives only should be made in France, namely, the Layens, Dadant, and Voirnot, and that all frames should be standardised on the basis of the outside dimensions.

Sixthly. That in each of the divisions created by the Minister of Commerce, the beekeeping societies should form a federation with a view to the development of a National Federation.

THE SCOTTISH BEEKEEPERS' ASSOCIATION.

The Annual Meeting of the **S.B.A.** was held in Perth on 10th April, under the presidency of Mr. John Anderson, B.Sc., E.B.: S.B.A., and was an unqualified success. The Executive's report indicated satisfactory progress in almost every department. The lists of Life Members and Patrons continue to increase ; the number of Associates is constantly growing. The number of new associations is nine, and the Associations now total 34, with numerous branches, having a membership of upwards of 2,500, the whole country being now more or less completely covered. The Scottish Board of Agriculture made a Grant of £100 for propaganda work and organising associations, for arranging courses of lectures, and for commencing a register of beekeepers and hives in Scotland.

The Finance Committee's report showed a credit balance of upwards of £29 ; and it was resolved to reduce the subscription of federated associations, so that the minimum now is 5/– and the maximum £1 1s. 0d. It was agreed that the **S.B.A.** should affiliate with **The Apis Club** and pay an annual subscription of £2 2s. 0d. and urge the members to give the **Club** and THE BEE WORLD whatever support they could.

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* Translated from "**L'Apiculture Francaise**" of February, 1920, by E. G. Burtt.

The Legislation Committee recommended the **S.B.A.** to give a general approval to the Bee Diseases Bill, and to appoint Messrs. A. A. Blair, J. W. Moir and the Hon. Sec. as a deputation to the Scottish Board of Agriculture, with a view to getting certain improvements introduced in the clause applying the measure to Scotland. It was also resolved to appeal to the Board of Trade Committee to put into operation the Merchandise Marks Act, for the protection of our native honey, so that foreign produce must be marked with the place of origin.

Arrangements were made for the Annual Exhibition to be held in Aberdeen in July in connection with the Highland and Agricultural Show, with the same variety of interesting features as at the Edinburgh Show last year.

The Education Committee reported that 24 candidates had been successful in passing the examination for the Expert Beemaster diploma and that 60 had gained the Beemaster certificate. It was resolved that candidates who hold the preliminary certificate of the **B.B.K.A.** or the **I.B.A.** or of the **Agricultural Colleges** should not be required to pass the Beemaster examination before entering for the Expert Beemaster certificate. The number of lectures and demonstrations had shown a very considerable increase and a second set of slides with corresponding Lantern Lecture had been provided for issue, free of charge, to any Secretary, Associate, Expert or Beemaster. The number of books in the library now exceeds 500 and no fewer than 418 volumes were issued to members during the year, free of charge, except the return postage.

Hearty votes of thanks were accorded to the retiring office bearers and the list for the current year is as follows: Hon. President, His Grace the Duke of Atholl, K.T., D.S.O.; Hon. Vice-Presidents, The Countess of Mar and Kellie; Lord Forteviot; Sir R. P. Wright, L.L.D.; Major Murray, of Polmaise; Mrs Grant Peterkin, Grange Hall, Forres.; Hon. Sec. Rev. John Beveridge, B.D., M.B.E.; President, Mr. James H. Langlands, C.E., E.B.: S.B.A.; Vice President (President Elect) Mr. J. R. Dickson, Alloway, Ayr; Past President, Mr. John Anderson, B.Sc., Aberdeen; Treasurer and Librarian, Mr. J. W. Moir, E.B.: S.B.A.; Secretary and Registrar, Miss E. Beveridge, M.A., United Free Manse, Gartmore. Hon. Associates, Dr. A. Z. Abushâdy; Rev. J. G. Digges, M.A.; Mr. William Munro, E.B.: S.B.A. and Mr. Robert Steele. The Rev. J. W. Blake, M.A., Temple, was appointed to the vacancy in the convenership of the Propaganda Committee and the other conveners were reappointed. The series of motions on the agenda for the purpose of bringing the Council into closer touch with the associations were all carried with enthusiasm. Hearty votes of thanks to the chairman and others terminated a most interesting and successful gathering.

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THE NATIONAL ASSOCIATION OF THE U.S.A.†

The **National Association** met at Buffalo, March 9th-11th, approved the action of the Kansas City meeting of January 6th, organising an "**American Honey Producers' League**," and dissolved itself after voting to merge the Association into this League. Previous to this action it approved the decision of the Association of New York Societies, which also joined the League.

We trust that those who are inclined to criticise the organisation of an "**American Honey Producers' League**" will read its contemplated functions in the "League Bulletin," which is being sent freely throughout the country. Like the citrus fruit men, the honey producers of America need to brace against each other, and it is not sufficient to organise local or State honey producers' associations. These must be connected with each other, though independent from one another, in order to secure the benefits of union.

This is not the first time that the honey producers try to join hands. Other attempts have been failures. But they are getting nearer and nearer to the goal.

In the September number of THE BEE WORLD (page 75) we drew special attention to this movement of amalgamation in America, which is certainly worth close attention, especially by secretaries of Associations in this country. The above remarks, however, clearly show that there are big difficulties in the way of such an achievement. Through the enthusiasm Mr. Claridge this question has recently received some ventilation in the **B.B.J.** It remains to be seen what interest will be aroused before any step is taken, lest it may prove to be a false step. This however does not mean that interest in co-operative marketing should not be **created**; on the contrary. But as a first step a very big organisation of beekeepers is needed, especially in a country where professional commercial apiarists form a very small minority. **The Apis Club** is admittedly the most suitable medium for this work, because of its co-operative, national and international character. It commands the confidence of almost every section of beekeepers, and receives no hindrances except through misrepresentations. To achieve its progressive objects it is necessary to make it not only powerful, but fully representative, or else it will give birth to a new party, thus defeating its own objects. For this reason every section of beekeepers should **fully** make its Cause their own, so that when the General Conference is held on May 29th, a truly representative and powerful federation—to the greatest possible extent during the first year of its organisation—will be in being. For this purpose the **maximum** enrolment of enthusiastic members is needed.

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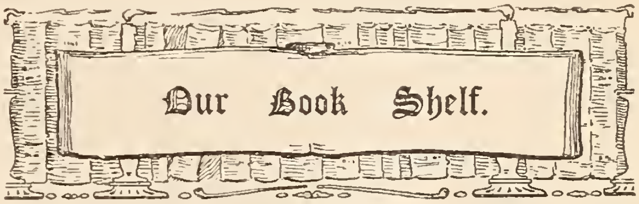

Our Book Shelf.

Books still accomplish miracles; they persuade men.—CARLYLE.

"DER BIEN UND SEINE ZUCHT."

(THE BEE COLONY AND ITS MANAGEMENT.)

By PASTOR GERSTUNG. *

The author of this book is a man with a theory. For many years, it appears, he has been contending for it against the rival theory of the older or Dzierzon school. Dzierzon's followers consider the bee a creature of marvellous intelligence, and the arrangement of her dwelling a matter of choice on her part, or of chance. Gerstung, on the other hand, holds that the bee is an automaton, and the bee colony an organic unit; and that every cell in the combs and every bee on them has its place in the "organism," which cannot be disturbed (e.g., by the beekeeper "spreading the brood") without serious harm to the colony. The queen lays her eggs in a regular sequence, returning to the same spot every 22 days; the stores of pollen and honey stand in a definite relation to the brood nest. The bee milk or brood food constitutes the life blood of the colony-organism; its surplus or shortage is responsible for setting in motion all the various activities of the hive. These theories are developed with considerable skill, and appear to be in the main correct, though details will doubtless need modification

The book opens with some general information on beekeeping; the natural history and anatomy of the bee are then discussed (including the brood food theory aforesaid). Sections on the apiary, hives and appliances follow, the descriptions being for the most part limited to Gerstungs's own system. In this connection there is, however, an interesting discussion of the frame question. Gerstung's frame measures 40 × 25 cm., and is used either as a deep frame parallel to the entrance, or as a wide frame perpendicular to it. Its dimensions in the latter position are practically those of the 16″ × 10″ frame (for its inside measurements are 15¾″ × 9¼″ nearly). Gerstung considers that frames smaller than this cramp the brood nest, and reduce the winter stores to a dangerous extent. (It is however important to note that the German winter is much more severe and prolonged than ours; so that it does not follow that this size of frame would be best under British conditions.)

Many of the methods described are of course adapted to bee-house beekeeping; there is a section on bee-house construction.

The year's work in the apiary is described in detail, on the basis of the brood food hypothesis; much light is thereby thrown on such matters as artificial swarming and queen introduction.

In the chapter on diseases it is interesting to note that, in Germany as here, the believers in **Nosema** as the cause of malignant dysentery are not without their opponents. Gerstung's own opinion of May-sickness is that it is a disease of the respiratory system; but one's confidence in his judgment is considerably shaken by his glib repetition of the hoary fallacy, that a bee about to fly can make an appreciable difference in her weight by inflating her tracheal sacs. A compatriot of Count Zeppelin should have known better!

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† The **Am.B.J.**, April, 1920.

* 5th edition, Berlin, 1919. Fritz Pfemingstorff, Berlin, W.57, price 12·35 mk.

The book is provided with a good index, and is profusely illustrated; a feature being the numerous representations of apiaries in all parts of Germany, where Gerstung hives are in use.—Annie D. Betts.

The Present State of Beekeeping in Austria.‡

Beekeeping—like much else in Austria—is at present carried on under considerable difficulties. The railway service is a quite uncertain quantity, many firms are unable to execute the orders they receive, and as for the supply of sugar for bee-food—! Here, we grumble at the high price, but we do at least get our sugar. In Austria, it appears, you pay for your sugar in advance, but do not always get it; for it is occasionally commandeered by the local food controller and distributed to the general public in his district. You may get some later; or you may not. In any case, feeding bees in midwinter in that climate (where snow lies till April) is no joke, many had to do so, owing to delay in arrival of their sugar.

"**Bienen-Vater**" is an interesting periodical, not only for the light it throws on Austrian beekeeping, but also as a source of technical information. A considerable number of the articles are written by teachers of beekeeping, and other persons who have passed their expert examination. The circulation, we are informed on the cover, is 24,000. (One wonders what that of all our British bee papers, taken together, may be?).

No. 1 begins with an account of the courses to be held during 1920 at the School of Beekeeping in Vienna. These range from classes for beginners to a course in bee-anatomy; some are gratis, for others there is a small fee. The enthusiasm for knowledge that demands such courses, and supports them when instituted, is one of the things we in this country might with great advantage imitate. It is interesting to notice that a class in skep-making is included in the list. Owing to the high price of frame hives, skeps have come into favour again in Austria. The dilution of the currency has raised the price of everything to an immense (nominal) figure. A satisfactory bee-house, for example, costs as much to build as a house did before the war. Prices fluctuate also so much that very few of the advertisers in "**Bienen-Vater**" name the prices of their goods. A wax press of apparently simple construction, advertised in No. 1 at 65 Krene appears again in No. 3 at 75 Krene. (A Krene used to be worth about ten shillings, but has now the purchasing power of a Kreutzer—about a farthing—according to a statement on page 44).

Besides the general poverty and shortage caused by the war, beekeepers have suffered through the destruction of great numbers of nectariferous trees, cut down for fuel. As before mentioned, the sugar question looms very large; in addition to the high price and difficulty of getting it, in some parts the general public seem to have resented the allotting of sugar to beekeepers, owing to a suspicion that they were profiteering in honey. This suspicion "**Bienen-Vater**" advises its readers to allay by selling direct to the public, so that the middleman's profits may be eliminated.—A. D. B.

L'Ape e la sua Coltivazione.*

A Theoretical and Practical Treatise by A. de'Rauschenfels and V. Asprea.

The first edition of this work, written by A. de'Rauschenfels, many years ago, has been revised and considerably enlarged and brought up to date in a second edition by Dr. Vincenzo Asprea, of Gallina, Reggio, Calabria, Italy. Dr. Asprea is one of the leading figures in Apiculture in Europe. There are few men who possess a wider knowledge of beekeeping as practised in the various civilised countries of Europe and America than the author of the second edition of the work under review.

The theoretical side is admirably and fully treated, and a perusal of the list of eminent scientists, entomologists and apiarists given in the preface proves clearly that every fount has been tapped for the benefit of the reader. There has been no filching of knowledge, and credit is given where credit is due.

Although primarily written for Italian Beekeepers, the practical side of this book is of considerable interest to Beekeepers the world over and especially so to the British Apiarist. There is such a radical difference between the British and Italian climates and an even wider difference between the climates of northern and southern Italy, that a management suitable for a colony of bees in the one case would prove hopelessly defective in the other. For the tyro in apiculture the acquisition of the knowledge necessary for the keeping of bees in his own country is a study of sufficient magnitude, but the experienced beekeeper, if he desires to excel, must widen his knowledge beyond that which he gained from national sources, and seek other points of view, other information, other methods from other countries.

Particularly interesting reading is the Chapter No. XXVII in view of the recent discussion on the size and shape of a larger frame than our British Standard. British beekeepers know that there are two types of hive in general use in Central Europe; the vertical hive with fixed cover, and the horizontal type with detachable cover, known generally throughout Italy as the German Hive and the American Hive. All our hives: Cowan, W.B.C., etc., belong to the latter class. The former class, the vertical hive, was first used by Dzierzon and subsequently modified and standardised by Berlepsch in Germany, and by Sartori in Italy. This hive contains three tiers of frames, each tier containing 14 frames, measuring 10″ × 8″ internally, placed one behind the other, that is "warm way" or parallel to the entrance. Between the middle and top tiers of frames, there is a horizontal division board provided with a closable hole. This upper compartment of 14 frames constitutes what we in Britain would call the super, and is generally given an independent entrance. Except during the honey flow, communication with the super is closed. Access to the hive is gained from behind, not from above, by means of a hinged door in the back which exposes the three tiers of frames simultaneously.

The "American" or "horizontal" hive needs no description. It is the same the world over, differing only in the size and number of the frames. That standardised in Italy contains 12 frames each 17″ × 12″ (neglecting decimals) giving 4,900 square inches of comb surface against 2,380 square inches for a 10-frame British Hive.

Those who would depart from the British Standard would do well to read carefully Chap. XXV, wherein de' Rauschenfels describes and champions the Berlepsch Hive, Chap. XXVI in which Asprea describes and pleads for the American type, and finally Chap. XXVII, where Dr. Asprea exercises a noble and most admirable restraint in his capacity of a judge summing up the evidence of the contending parties. The British Apiarist will learn much which will help him to a full understanding of the question of the size **and** shape of frame. The shape is of far more vital importance than the size of the frame. Those who advocate the use of two brood chambers will have food for thought when they read that in order to induce the establishment of a brood nest embracing all the combs of the two lower tiers, users of the Berlepsch hive found it necessary to replace the first four combs in the bottom and the corresponding four frames in the next upper tier with 4 frames hanging down the full depth. In other words, in place of 8 combs (4 below and 4 above) each 10″ × 8″ four frames, each 10″ × 16″, are used.

Chap. XLVI on the propagation of the race is also of particular interest to the **permanent** student of apiculture. The absence of a substitute for honey in Italy makes beekeeping a much more difficult business than in Great Britian. Excessive artificial swarming is physically impossible, for the simple reason that the bees cannot collect the wherewithal to build up. This is rather a blessing in disguise, for the Italian beekeeper does not know I.W.D. as such.

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‡ "**Bienen-Vater,**" 1920, Nos. 1, 2, 3 (pp. 1-52). The official organ of **The Austrian National Bee-keeping Association**, and its branches; also of the Bee-keepers' Associations of Salzburg, Styria, Bohemia, and Carinthia. Published in Vienna.

* **Ulrico Hoepli, Milan. 1914. Price: L.8·50**

That does not infer that it does not exist in Italy. Many a late cast succoured with honey by a well meaning beekeeper, manages to establish itself on combs and provide itself with brood only to succumb in the early winter to what we here would call I.W.D. Had the cast not been helped it would, in all probability, have died of starvation before the end of the summer, as it is it dies from disease brought on through overwork. It is, however, beginning to be appreciated in this country what enormous quantities of food are required by a developing colony of bees. Even the most ignorant beekeeper in Italy has learned this from bitter experience. The advent of spring in Northern and Central Italy is of theatrical suddenness. Equally fast is the rate of building up of colonies. Then the nectar flow comes, or it does not. A few days of dull weather with the flowers ready to open their petals come along. The bees are carrying twelve 17″ × 10″ frames of brood and would starve in 48 hours if neglected. A Dadant-Blatt frame of capped stores given such a colony under such conditions containing 5 kg. (11 lbs.) of honey, will be cleaned out within 24 hours. Our climate with its glorious uncertainty and frequent set-backs makes matters easier. The bees are not hovering on the edge of the precipice except when the apiarist unwittingly deludes them by clumsily regulated feeding, and he has not had brought home to him the full significance of the Domestic Economy of the Bee. Buyers of nuclei who receive delivery after the honey flow has reached its maximum, must be prepared to feed anything from 50 to 100 lbs. of syrup (40 to 80 lbs. of sugar) per nucleus, depending on the weather and the flora if they are to come through strong at the beginning of the following flow. A smaller amount will mean that the colony will be slow to build up the following spring. Still less, and it will winter badly. A still more parsimonious treatment, and it will dwindle in the spring. A further curtailment in the ration will make the colony die of I.W.D. in January or February, and the limit is reached when the colony dies of starvation, and, or I.W.D. in the late autumn.

Altogether **"L'Ape e la sua Coltivazione"'** is well written, generously illustrated, and last, but not least, is provided with a good index and cross references. If we may offer a suggestion, we would say that the book is worthy of a better binding than that adopted "à la Tauchnitz."—H.M.S.

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BEEKEEPING STUDY IN GERMANY. In Germany, the study of apiculture is part of the school curriculum; observation hives with microscopes being established in many of the classrooms. Is there any reason why an endeavour should not be made to interest our children in the keeping of bees?—**The Canadian Horticulturist and Beekeeper.**

MY MAD BEES. I have one stock that I christened "mad" since I first observed it in the winter. Though the entrance is quite clear, to the very back of the hive, these bees persist in using as a doorway, some crack they have discovered in the side. A few use the entrance and a good alighting board, the great majority, this awkward side crack without alighting board, and now becoming obstructed with nettles. It is painful to see them heavy with pollen-loads and honey resting on leaves till they can find the energy to tackle that difficult entrance. The crack faces east and a sheltering building, the proper entrance faces south. The frames run at right angles to the proper entrance, and as far as the case goes, it seems as though the bees had a strong preference to enter the hive in the same direction as the combs run.—G. G. Desmond, Sheepscombe, Stroud, Glos.

THE 14″ × 12″ FRAME. Through the devoted interest of Mr. E. R. Seadon, to the 14″ × 12″ frame, the factory of Mr. Baldwin, of Bromley, Kent, is becoming a head centre for the production of the new British Deep Standard. Following the reaction for the claims of the 16″ × 10″ frame, the 14″ × 12″ frame is beginning to establish its distinctive merits, and is appealing more and more to British apiarists who prefer to think for themselves.

A NEW ERA. Let us go back to the rudiments of things and see what really are the great stakes at issue. To day is the beginning of a new era for science in that pure scientific research is, for the first time, being regarded as part of the national organism. Let us see what that really means. If we trace the long progress of animal evolution upwards from lowly forms of life, without eyes, without heart, without skeleton, without brain, we find that three separate and unrelated branches appear as dominant types. One (dominant in a lesser degree) is represented by the octopus and giant cuttlefish; the second by the amazing tribes of insects—bees and ants above all, and the third by the higher vertebrates, the birds on the one hand and on the other the mammals, culminating in Man. What has made these creatures predominate over others?

When we analyse the different possible factors, we find that a small part of their success is due to mere size, somewhat more to the perfection of bodily mechanisms like those of locomotion, circulation, or digestion, but by far the most to one single cause—improvement of brain: in other words, to better perception, better co-ordination, better memory, better powers of learning, and, finally, better thinking. Let man not delude himself into imagining that his short history is not subject to the same laws that have been tested on the tens of millions of years of evolution. The units of which he forms part, whether they be tribes, city-states, nations, federations, empires, or what we hope will be the last and greatest unit, federalised humanity, will thrive and persist partly as they increase in size, still more as they improve their mechanisms for communication, for law and order, for commerce, for finance, but chiefly in proportion to the amount of time, trouble, man-power, and wealth which they are prepared to devote to discovering, correlating, recording, educating, and, most of all, to thinking.—Julian Huxley in **The Daily Herald.**

OBSERVATIONS ON EGYPTIAN-ITALIAN BEES. "The Egyptian-Italians were flying to-day and although the wind was very strong, they were able to make a safe landing, so they are strong on the wing. I saw 2 young drones that they had thrown out because the weather was bad. They are pretty bees, with more yellow colour than most of my Italians." This note dated April 16th, comes from Mr. H. Watts, of Maidstone, the well-known champion of the Italian Bee.

THE OBSTACLES TO AN INTERNATIONAL MOVEMENT. Hardly did our appeal to conscientious and fortunate German beekeepers to assist their innocent neighbours in France and Belgium appear when copies of **Bienen-Vater** reached us. In the January Number of our contemporary, the following "New Year's Words" are given. They are translated literally. Even allowing for different sentiments and national views, it seems to us a hardly fitting medium for technical literature to voice such sentiments, especially when the Great War has taught Humanity the golden road to progress, as shown by the the intellectual revolution and the developing spirit of co-operation, both nationally and internationally almost everywhere. The manifesto to which we refer is signed by Herr Dozent Oswald Muck. It reads thus: "A sad year for the Association sank into eternity with the year 1919. As a consequence of the infamous forced peace, famine and domestic misery march through little, crushed German Austria. Even our freely-chosen name has been torn with a rough hand from our forehead. Our National Association, the pivot of the German beekeepers of former "Austria," has been robbed of several thousand staunch German beekeepers, under the cloak of humanity and justice, by the separation from purely German territory. But it cannot remain thus for long. We long and wish that, with the dawning year 1920, want, care and misery may begin to retreat, and the hope of a happy reunion of all German territories and beekeepers may begin to grow green! Under the impulse of this powerful feeling, I wish all members good luck in 1920!" In the last candid sentence, the writer has given his excuse. Let us remember also that Austro-German bee-keepersare suffering terribly, in contrast with German apiarists. No doubt Time will heal the wounds of Humanity.

GETTING BROOD TO THE TOP-BARS.

No matter how well frames may be wired, nor how well the foundation is re-inforced against stretching, the queen may or may not go above the two-inch space below the top-bar, if the top of the hive does not have a warm cover. Where there is a board of only a single thickness, a great deal of cold, if the weather is chilly, can penetrate during the night. The queen is not likely to stretch her brood up into a cold area. If she does not occupy the space, the bees will be likely to fill it later on with honey. In the case of a two-storey hive, when the frames are properly wired, we should expect the brood to go clear up to the top-bar in the lower story, but not in the upper story if it has an ordinary single-board cover. The moral of this whole thing is, a hive should have a warm top, and frames so wired that neither the combs nor the foundation will stretch.—**Gleanings**.

HELPING OUR FRENCH COMRADES.

In reference to the fund for the assistance of the depleted French areas, why should an embargo be placed on stocks or queens from England, providing the donor will guarantee their coming from healthy stock? I shall be very pleased to give a few queens and a nucleus or two, if they would be accepted by the **Societe d'Apiculture.**—F. M. Claridge, Copford, Colchester.

LEGISLATION IN SWITZERLAND.

Reviewing *Jahresbericht über die Faulbrutversicherung des Vereins Schweitzer Bienenzüchter pro*, 1919, by F. Leuenberger, Bern., the **B.B.J.,** which is whole-heartedly for Legislation, comments as follows: This is the 12th annual report of the results obtained in German-Switzerland as the result of legislation and insurance. There was a large increase in the number of beekeepers insuring amounting to 1,024, with 16,684 colonies. Thus they have reached the record number of 14,684 compulsorily insured apiaries containing 162,346 colonies.

During the year foul brood was found in 89 apiaries, 70 of which belonged to members of the Association and 19 to non-members. The percentage of foul brood cases is 0.5 per cent., or one colony in every 200. The highest percentage of disease is found in the following cantons:—Valais, 6 per cent.; Glarus, 2.9 per cent.; Bale, 1.1 per cent.; Lucerne, 0.8 per cent. It is satisfactory to find that in six cantons, namely those of Uri, Zug, Soleure, Schaffhausen, Appenzell and Thurgovie, not a single case of foul brood was found. The results show the value of inspectors and the advantages that resulted from legislation. Valais still shows the highest percentage of cases, as it was the worst-infected canton in Switzerland, but even here we find the percentage of infected colonies reduced from 10 per cent. in 1913, to 6 per cent. The high percentage is accounted for by the fact that foul brood had for years become endemic in this canton, owing to no measures having been taken to combat it previous to legislation. In the 89 apiaries consisting of 620 colonies, foul brood was found in 199. Of these artificial swarms were made from 61 and 138 were destroyed and appliances disinfected. In accordance with recent investigations, it is possible to free honey of the disease germs by adding 50 per cent. of water and boiling until it is reduced to the original consistency of the honey. It is, however, not suitable for commerce.

We would remind our readers that the Swiss Cantons have delegated their powers to the **Swiss Beekeepers' Society,** who is authorised to administer the law. By this everyone is required to notify the presence of disease in his apiary, but only members of the Society are entitled to compensation. No purchase of bees can take place without a health certificate, and the purchaser who does not conform to this condition forfeits all right to compensation in the event of foul brood being found in his apiary.

The finances in connection with the scheme, which is administered by M. F. Leuenberger, are in a flourishing condition, for although the insurance is only 5 centimes per colony, and no call has been made on the Government for financial help, it has been amply sufficient to pay all expenses including compensation. The insurance premiums amounted to 8310.35 francs, and compensation cost 4530.90 francs. We congratulate our Swiss friends on what the Society, under the able direction of M. Leuenberger, has been able to accomplish with the powers that legislation has given them.

INTENSIVE AUTUMN BREEDING.

An able critic writes: "My strongest stock was the only one not fed in the autumn, and the only stock which had no sign of brood in mid September. It wintered in a single-walled hive. It was packed for winter with heaps of bees **that had done no work**. Their age in days or weeks is immaterial to me. We want for wintering bees with vitality unimpaired. Children would not winter well at the North Pole, nor would old men; it takes vigorous manhood to do it."

We feel sure we have never advocated the toleration of bees lacking in vitality. On the contrary, our plan should mean the strength and prosperity of the colony. Mr. William Herrod-Hempsall who is undisputably considered as the flower of the Cowan school of beekeepers, and to whose credit the least that can be said is that he is master of his system of practical beekeeping, is credited with teaching that he cannot have too many "soft" or young bees in the autumn. Non-orthodox beekeepers, generally speaking, advocate the same practice for the sake of longevity, for furnishing bees more suited for early breeding in spring, and for the prevention of spring dwindling. Mr. Sturges whose article in this number has been supplemented since its recepit by additional observations, gives a further testimony based on studious research. But why should we give any references? We are advocating intensive autumn breeding for a most important purpose apart from those already referred to, namely **the production of a class of bees which are scientifically recognised by more than one authority as being comparatively immune to I.W.D., an infection which is most prevalent during cold weather.** We fail to see that bees produced by the end of September will be "soft" by mid November, when I.W.D., at the earliest, begins to declare itself violently. At the same time, such bees will be capable of longevity. Assuming even that they would need special protection from inclement weather, it would pay the beekeeper to do so than raise bees of greater susceptibility to this terrible disease.

JARRING THE BEE-LOVER.

"I regard THE BEE WORLD as a big-minded paper and hope it will keep free from discordant wranglings, which jar a bee lover as knocking the hive jars our industrious little friends. I am glad to see modern appliances and inventions receiving your editorial attention. The Bee Press does more, I think, to advance the Craft than other means and an international bee magazine was very much needed in latter years, owing to international bee trade.

I wish your researches every success. They are sure to be a great help. I am fond of experiments and like to test the dogmas laid down so far as one can."—The Rev. R. Doupe, Castlekirke Rectory, Maam, Galway, Ireland.

PROTESTING AGAINST THE NEW B.D. BILL.

We are reminded by the **Sheffield B.K.S.** that their representatives at the London conference did not fail to report to their members. At a meeting of the Society held on February 16th, it was unanimously resolved: "That this meeting of the **Sheffield Beekeepers' Society,** having read and considered the Draft Bill for the prevention of the introduction and spread of Pests and Diseases affecting Bees (1920), is in favour of legislation, but in our judgment the Bill is so drawn as to have the effect of hindering if not absolutely destroying the Bee Industry by placing every beekeeper at the mercy of an inspector who may or may not be a qualified judge in regard to bees, and who may come at his own discretion in the absence of the owners. We therefore ask that this Bill shall not be proceeded with in its present form, but that a conference be called at which the draft of a Bill may be agreed upon that shall prove educative and protective for the encouragement of the production of honey and of beekeeping."

NEWS FROM PORTUGAL.

Beekeeping conditions here in March and up to the present date have been extremely disappointing. We had no winter and the bees worked practically all the time, thus wearing themselves out, and just as they were getting into good condition again to take advantage of the first great honey flow, there came rain, high winds, and fog, which have lasted until now. April here is usually the best of the year and bees generally swarm now; but when I examined my colonies a day or two ago, they had much less honey than they had at the beginning of March, so I am afraid there will be a very poor harvest this year. My Italian bees are a disappointment. They have not increased at all well and are more backward than the natives."—G. B. Mitchell, Cerrado da Eira, S. Pedro de Cintra, Portugal. April 12th.

WHAT APPEALS TO THE PUBLIC.

An Irish honey producer writes: "What appeals to the public is the quantity of honey and the amount of money made. Well, I got last season an average of 102 lbs. per hive and from two to three nuclei per stock. But I quite believe Mr. Simmins that 150 lbs. ought to be the average in a good year."

QUEEN PRODUCTION FROM DRONE EGG.

"Mr. Barratt's success in raising queens from drone eggs is an epoch marker, and in my opinion, the most noteworthy event since Cheshire's experiemnts; and I hope plenty of sidelights will be thrown on it so as to develop its possibilities."—H. R.

FOR THE CONVENIENCE OF LONDONERS.

The Service Company Ltd., of 289-293, High Holborn, London, have completed their arrangements for a big store of bee hives and appliances of well-known makes. They are allowing a special discount to members of **The Apis Club**. Visiting members speak highly of the treatment accorded. It is of course a great convenience to members in or leaving London to be able to take goods away without paying the heavy cost of carriage or postage.

The Service Company have a very big stock of Root's Foundation and an equally big stock of various appliances. We are disappointed however, to notice from their list the absence of the Steam-Heated Uncapping Knife and other valuable American appliances that fully merit to be introduced here. Considering the great shortage of hives and appliances on the British market in comparison with the tremendous demand, the Service Company are to be congratulated on their foresight and enterprise. A city depôt is a splendid idea and is worth copying in other big towns by enterprising firms which have interest in beekeeping.

M.B.E. FOR THE REV. JOHN BEVERIDGE.

Among the recipients of the M.B.E. in the recent Honours List, is the Rev. John Beveridge, B.D., of the United Free Church, Gartmore, formerly of Fossoway, for valuable service rendered as Honorary Commissioner of the War Savings Committee. At the beginning of the Savings campaigns he addressed many of the Perthshire schools, and started active Savings Associations where the ordinary Savings Bank made no sufficient appeal. Mr Beveridge is well known as a lecturer on Norwegian subjects, and as president of the **Scottish Esperanto Federation** he often appeared at Esperanto functions in Perth. He is one of the translators of the Bible into Esperanto. Last year he was President of the **Scottish Beekeepers' Association**; and when Mr. Henry Crombie, M.A., Dunkeld, resigned the office of hon. secretary of the Scottish Association in January, Mr. Beveridge was unanimously chosen to succeed him. The Directors of the Highland and Agricultural Show have just appointed Mr. Beveridge to be the sole judge of the Hive and Honey Section of the National Show, which is to be held this year in Aberdeen. Mr. Beveridge is the author of half a dozen volumes mainly on historical and Norwegian subjects.—**The Perthshire Advertiser.**

PRESENTATION OF AFRICAN HONEY.

We have received with thanks from the **B.B.J.** Office an interesting specimen of African honey in a leather bag enclosed in a tin case, as exported. The sample is of Wandorobo wild native honey from British East Africa and was originally sent by Mr. H. M. Birch, P.W.D., Nawisha, B.E.A.

BOZZALLA QUEENS IN CANADA AND THE STATES.

Mr. H. M. Stich is to be congratulated on having been able to bring in sharp relief, not only to the notice of the British public, but to beekeepers in other European countries, apart from Canada and the United States, the merits of the Bozzalla strain of pure Italian bees. Although selected and tested, Bozzalla queens, through the enthusiastic efforts of Mr. Stich, are being disposed of at a price usually asked for an untested queen. As a member of **The Apis Club**, fellow members are indebted to his courtesy for his instrumentality in allowing a ten per cent. discount from Signor Bozzalla on their orders.

EXERCISE YOUR VOTE.

The coming Conference of **Apis Club** members on the 29th of May is strictly limited to them. Original subscribers of THE BEE WORLD, who, up to the date of the Conference continuing to be non-members, are **not** entitled to attend. Every member should exercise his or her vote either in person or by proxy. In the latter case he must inform the Secretary of the Club at least a week before the meeting.

OUR FAULTS.

In a leading editorial **The American Bee Journal** for March makes another appeal for this magazine. Both C. P. Dadant and Pellett are leaders who combine with their knowledge an exceptional driving power, and we record with regret that their example is sadly lacking in this Country. We are so much blessed here with more intriguers than reformers that our best bee men are living in the silence of despair with paralysed initiative. Were it not so, **The Apis Club** would have been the most suitable medium for fulfilling a good deal of the humanitarian wishes of our American friends in regard to the Franco-Belgian war relief, and for several other national and international services.

Referring to our complaint of want of support, our contemporary candidly remarks: "This should not be. THE BEE WORLD is trying to become an international magazine on bees, and we need such a magazine. It is an excellent publication and should not go a-begging. The fault with it, as with many other European periodicals, is the lack of advertising pages. No magazine can live and thrive if it is not supported by advertisers." We may remark that it is impossible to make this magazine **fully** international unless it receives adequate advertising support from every leading country. It was only fitting for the oldest bee publication in the English language which is edited with an admirable international spirit to make the cause of THE BEE WORLD its own. Unless the **Am. B.J.**, **Gleanings** and other leading bee papers are prepared to give this unselfish and thankless cause their repeated publicity, the uphill work before us will be rendered more difficult. Will America lead the International Bee World in patronising **The Apis Club** and its organ? Perhaps the American Trade may succeed in making the Craft here a little ashamed of themselves.........

THE VALUE OF BASIC SLAG.

It has good returns on grass lands, especially on heavy soils, bringing in the finer grasses and **encouraging the growth of clover.** In this way it increases the nutritive value of herbage on old pastures. This has been demonstrated beyond dispute by the careful and extensive experiments conducted in England and Scotland during the past 10 years. The full return from an application of basic slag will not be obtained the first season, as its phosphoric acid is not immediately soluble, but its effect will be marked as a rule throughout the rotation. In a sense, it is a slow-acting fertiliser, but it is a durable one. The minimum application advised is 500 pounds per acre; the maximum, 800 or 1,000 pounds. It is best applied as a top dressing on the plowed land in the fall or very early spring, and harrowed in.—F. T. Shutt, Dominion Chemist, in **The Canadian Horticulturist and Beekeeper.**

IN GRATEFUL REMEMBRANCE.

In a subsequent issue of THE BEE WORLD, we shall publish in grateful remembrance the names of donors and amounts paid to our Funds during the first year of our activities, ending May, 1920.

DEATH OF A LADY BEEKEEPER OF INTERNATIONAL FAME.

The following notice appears in the **Am. B.J.** for March: We are in receipt of a letter from our old friend, the well-known writer and editor, Thos. Wm. Cowan, of England, informing us of the death on January 1st, of Mrs. Therese Bertrand, widow of the once editor of the **Revue Internationale d'Apiculture** of Geneva, Switzerland. Probably few of our readers know of this estimable and talented lady, who for years worked with her husband, both in keeping bees and in editing valuable works on bees.

The daughter of parents who were both famous in literary circles, Mrs. Bertrand laboured with zeal for the promotion of progressive beekeeping on the Continent. She was a linguist and often translated articles for publication. The January number of the

Bulletin de la Suisse Romande publishes the translation of an article from the **American Bee Journal,** upon which she must have worked only a few weeks before her death.

Mrs. Bertrand was also known for her great heart and her devotedness to the cause of humanity. In 1914, when 72 years old, she volunteered, with 1,200 other Swiss women, to organise the International Red Cross Prisoners' Agency, which located the fate of 83,000 men in the early part of the war, when other services were not yet fully organised.

Those who have the files of the **American Bee Journal** since 1913, can find mention of the Bertrands in October, 1913; May and October, 1914; April, 1915; and March and June, 1917, when Mr. Bertrand died. The leading book of the Bertrands, "**Conduite du Rucher**" (Management of the Apiary), was translated into seven different languages. It expounds the American systems for European use.

ELIMINATING I.W.D.

The successful "treatment" or greater still the "elimination" (in the true sense of the word) of I.W.D. is one based on the eradication of its cause and effects. What is understood by I.W.D. is a peculiar infection of a dysenteric character, although symptoms of disabilities of bees, whether due to faulty management or otherwise, and somewhat resembling those met with in this infection, are erroneously taken to indicate malignant dysentery by many people. One is justified therefore in wondering what will be the attitude of the excitable inspector when legislation is introduced.

The actual cause of the infection being widely prevalent, it is logical to concentrate attention only on predisposing causes; and here **selective breeding** plays a most notable part, if correct, in resisting this disease, and vice versa. Pedigree breeding of bees is often a farce. In the same apiary it is a synonym of "inbreeding," and we refuse to believe, on scientific and common sense grounds, that good queens can be produced except by constant experimenting, selecting and testing, so much so that even one batch of queens raised under exactly identical conditions may partly show disappointing features, if not carefully tested. No strain of bees should be despised and none should be too much praised purely on reputation. The acid test is results, and these are fully dependent on the quality of the queen, produced by careful selecting and testing, not by titles and valueless pedigrees. This is a most important factor in regard to combating I.W.D. and cannot be emphasised too much. We have dwelt before on other **predisposing factors** and we may do again in future

Should I.W.D. occur during the season in a severe form, so long as rapidly hatching brood is still existing, there is no better course for treatment than better **requeening.** This, in reality, is no treatment, as it is simply a complete condemnation of the affected strain and it is a profitable course to the apiarist for quick results. On the other hand, if the attack is transient and mild, the queen should not be discarded but treasured for the obvious reason that this is how our comparatively resistant strains are created.

In winter, when breeding is at a standstill, a big mortality is a serious matter and towards its arrest to a tolerable figure efforts must be directed if loss of colonies is to be averted.

We have not denied the profitable advantage of independent brood incubation. We have **advocated** it on what we considered to be the most economical and scientific lines, giving full regard to the requisite temperature and humidity. Hatching bees of a strain that has shown itself to be degenerate and poor are only of temporary value, e.g., as a medium for the introduction of a good queen. They may show comparative resistance to infection while young (and this indicates that they should not be condemned) but later on they are bound to contract it (not necessarily from within the hive) and succumb.

This point of view is sufficiently clear that one is at a loss to understand Mr. Kidd's further arguments and the advice given to him by the Ministry of Agriculture. If hatching bees are of such susceptibility to disease that, at the time when they should show the greatest natural resistance, there is a great danger that their contact with adult bees will prejudice their health, then such bees are worth nothing, since they are bound later to intermix with other bees (**drifting** is a reality which is often wrongly discounted) and readily contract the infection if so much susceptible to it.

As to germicides, these have their proper sphere of utility. We have given special appreciation of **Tri-Methenal Allylic Carbide Compound** (Yadil) as a food preservative and an exceptionally harmless internal antiseptic which could be given in **massive** doses without any harm to the bees. It should be most valuable in infections not accompanied by gross pathological lesions. Has any critic endeavoured to verify our statements?

Far from discouraging research, we are endeavouring to give it every possible stimulus, but we must safeguard against the reaction of disappointment in relation to theories if these are misunderstood, or else research will be unjustly placed in a position of ridicule.

THE DAY OF THE LARGE HIVES.

"I think the day of the Large Hives is sure to come and such hives are rather difficult to handle by one person. With this eventuality before me, I have designed a hive, the brood chamber of which could be 'fixed up,' so that one could enclose all the bees and move them to a fresh stand, when necessary, without having first to scour the neighbourhood, often in vain, for assistance, and to so fit the floor board that one could put in a clean floor, without any lifting whatever and without any fear of hurting or crushing a single bee. This last result is obtained by making the entrance of the Body Box high enough inside to allow the dirty floor board to slide out in front on being pushed from behind by a clean floor board, there being no dead end where a bee may be crushed."—R. Parrington, High Chapel, Dent, Yorks.

THE SHORTAGE OF BEES.

Despite the excellent efforts of the **Ministry of Agriculture,** there is as much shortage of bees in this country as there is of hives and appliances. On more than few occasions, beekeepers here have been more successful in getting their appliances from abroad delivered before the execution of their home orders! The same trouble applies to bee supplies. The Secretary of **The Apis Club** is much indebted under these difficult circumstances to fellow members who have placed at his disposal so many of their colonies, nuclei and queens for the benefit of needing members. Further supplies are now available as our publicity section shows. Special appreciation is due to the unselfish attitude of the President of the **Glasgow Beekeepers' Association,** Mr. Richard Whyte, who from the very beginning has given first consideration to the requirement by our members of bees from his extensive apiary at Orme Lodge, Cumbernauld Station, Dumbartonshire. At our request he is still reserving a limited number of nuclei to our present and future members who care to avail themselves of this service, combined with a special discount of 5 per cent. Members are requested **not** to write to the Secretary of **The Apis Club** regarding bee supplies, as they are expected to avail themselves direct of the facilities arranged. It should be remembered that it saves worry and often disappointment when orders are placed early.

In Cheshire, the Vice-President of the Association, Mr. Arthur M. Sturges, B.Sc., is distributing free of charge to fellow members in the country, all surplus virgin queens from his apiary.

WINTERING IN DOUBLE STOREYS.

We have said before that there is no indication for wintering in two storeys other than a large force of bees, otherwise there is danger of detached clustering and avoidable starvation occurring. It is not a rule that bees will leave the lower storey and cluster in the upper one. This will lead to an avoidable non-concentration of heat. So long as the hive is properly sheltered from draught, it is decidedly more advantageous to have a strong colony wintering in one large chamber than in two medium ones. The Honey Bee under modern methods is not living within Nature, but without it. Instead of dogmatising, we ought to **analyse** the cause and effect of natural phenomena and thus endeavour to make Nature our servant, not our master.

CHINESE BEEKEEPING.

In a letter to Mr. Frank C. Pellett † on Chinese beekeeping, Mr. C. G. Golding says that the Chinese bees are not so good as Italians. He is a possessor of 20 colonies of native bees and is not without "W.B.C." hives. The climate in his locality is subtropical in summer and the thermometer ranges from 80 to 106° F. in the shade; so a shed is absolutely necessary. Their winters are bitterly cold, but he does not move his hives into a cellar—they remain in the open the year around.

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† The Am. B. J., March 1920.

All his colonies were purchased from Chinese farmers and he had considerable trouble in obtaining them, as the natives regard bees as "joss pidgin"; i.e., symbols of good fortune. They think whenever they sell bees they are selling away their "good luck." They keep bees in baskets generally, suspended against a wall*. Occasionally bees are housed in wooden tubs or boxes. The Chinese know nothing about modern beekeeping methods. In Mr. Golding's opinion, the Chinese bee is the gentlest of its species, rarely using its sting. He never uses a smoker, wear a veil or gloves when handling his colonies. The first book he ever read on beekeeping was Pellett's "**Productive Beekeeping**" and he bought this in China!

SAMPLES!

I have a division board (belonging to a friend) that was put in with a swarm last year. The queen was lost and the bees have built on the board: one piece of worker comb, one drone comb and one queen cell.—W. P. Meadows.

QUEEN REARING IN NEW ZEALAND.

Our comments on queen-rearing for the sake of numbers and not quality (p. 100, October number) which we said is practiced by a certain section of the Trade in every country have been misunderstood in N. Z. to mean that they specifically apply to N. Z. beekeepers. This is far from being our meaning. A country which is rich in beemasters cannot be considered, except by an idiot, as retrogressive in the scientific part of beekeeping. What we meant and what we still suggest from original communications and study of current literature is that methods based on these faulty principles will exist in every country if only to gratify the "economic" aspirations of some members of the Trade. Our remarks abroad should be read in the light of our reminder to critics here that faulty methods of queen-rearing are not by any means a speciality for Great Britain, which again, is not lacking in good queen breeders.

AN EXPERIMENTAL PROJECT.

A co-operative experimental project has been effected between the **University of Tennessee**, Knoxville and the **Forest Ferguson Farms** of Dyersburg, whereby experiments of benefit to Tennessee beekeepers will be carried out. O. H. Reichley, a graduate of the University of Ohio, has been placed in charge of the 100 colonies of bees in the experimental apiary. Mr. Reichley was named President of the **Tennessee Beekeepers' Association** in December. The Forest Ferguson Farms consist of 1,360 acres, where better Tennessee farming is being featured.—The **Am. B.J.**

A WORD FOR DR. KEEBLE.

Commenting on the conduct of the London Legislation Conference "The Minority of One" criticises the March Editorial of the **B.K.G.** in the following words from a letter appearing in the April number of our contemporary: "I was present at the meeting on February 6th, and wish to protest against the insinuations that it was not fairly conducted. No Chairman could have been more impartial than was Dr. Keeble, and these insinuations come with a very bad grace from those who, having spoken against the Bill, had not the courage to vote against the resolution when it was put to the meeting. It does not say much for their convictions in abstaining from voting, nor for their honesty in now attacking a man when he is not present to defend himself; and it will not advance the cause of those who are opposed to the proposed legislation." The Editor of the **B.K.G.** adds that the report of the meeting, as published by the **B.B.J**.......does not appear to support the correspondent's contention, although it is pleasing to have his testimony to the Chairman's impartiality.

THE NEW HONEY EXTRACTOR.

Commercial beekeepers will be interested in a very able article in the March number of **Gleanings**, by H. H. Root, giving the history of the development of the Honey Extractor having centrally pivoted pockets. The new Buckeye central-axis reversible pocket honey extractor (**Root's Automatic Honey Extractor**) will permit of reversing at the will of the operator at any and all speeds.

THE ELECTRIC UNCAPPING KNIFE.

Our comments in favour of the evolution of this appliance on improved lines appear to have merited some curiosity and ridicule in the usual quarters. It will take less space than arguments to draw attention for instance to the electric uncapping knife manufactured in Italy by Signor Alexandre Tonelli, of Brescia.

THE SECRET OF THE HONEY-DEW.

Although known to occur in various forms, even perhaps as one of the constituents of the manna of Scripture, **Melezitose** is one of the rarest sugars. Minute quantities of it have been available to scientists for many years, but the supply has never been sufficient to permit of extensive experimentation. Now, by the aid of some Pennsylvania bees, many of which lost their lives, the **United States Department of Agriculture** has several kilograms of this rare substance, extracted and purified in the **Bureau of Chemistry.**

The bees in certain sections of Pennsylvania were storing up honey that crystallised, with the result that in the following winter seasons, the bees **were not able to digest it** and starved. The crystallised substance in the honey was found to be **melezitose,** which derives its name from "melez," the French name for the larch tree, on which it was originally discovered in the form of **honey-dew.** It also occurs in a sugary incrustation, or manna, on a leguminous tree in Persia and adjoining countries. Recently it has been found by the Bureau of Chemistry in a similar product on the Douglas fir in British Columbia. And now it has turned up in Pennsylvania, stored away in the honeycomb, in numerous hives. In this instance, the following origin of the substance has been worked out:

The scrub pine, and rarely other species of pine, are subject to attack by a plant louse and by a scale insect. **In the course of their life activities, these insects produce a honey-dew which is rich in melezitose.** In dry summers, after the white clover flowers have ceased to yield honey, the bees turn to this honey-dew and collect it; but it crystallizes as fast as they store it away. This occurred in 1917 and 1918, and considerable losses were suffered by beekeepers. In 1919, the weather was so moist during July that no melezitose was gathered by the bees at all. But it probably will be collected in future whenever summer is dry; and the honey of central Pennsylvania may afford a permanent source of sugar, previously so rare as to be only imperfectly known. The Bureau of Chemistry extracted considerable quantities from the honey of 1917 and 1918, and is making extensive experiments with it. Rare as it has always been, there is a definite demand for melezitose for use in scientific laboratories. It can be distinguished from other sugars by certain peculiarities of crystallisation observable with the polarising microscope.

FIT FOR A KING!

Mr. H. Watts, of Maidstone, the well-known specialist breeder of Italian bees in this country, has presented the "Training Apiary" of **The Apis Club** with a first-class colony of Italian bees, modestly described as a "nucleus." They are very industrious bees and are busily working now on metal foundation.

Our good friend Mr. Claridge has again enriched the "Experimental Apiary" of the **Club** with two colonies of Egyptian-Italian bees.

THE BEE GARDEN.

Visiting members to **The Apis Club** are given every facility for free study. To stimulate interest in botanical knowledge which is so closely associated with bee culture, a small model bee garden has sprung up at Port Hill House and has already received valuable presentations from Messrs. A. F. Harwood, J. P. Gee, R. B. Manley and T. I. Robinson. Through the courtesy of Mr. Manley it has not missed **sweet clover** now so much boomed in America. In this connection it is interesting to quote what **Gleanings** says in its April number under the title of "The Onward March of Sweet Clover in the Great West." The remarks are worthy of our leading contemporary because they are based on observations and facts and not on the dogmatic verdict of a celebrity. Mr. Ernest Root says that "if he had been told a decade ago that sweet clover, the much-despised and hated so-called 'weed' of the early days, would to-day run neck and neck with alfalfa, both in acreage and honey production in some parts of the great West, he would have said that it was impossible. Yet that is precisely what some reliable beekeepers of wide knowledge and experience have told us. Nay, more; we have seen within the last 30 days, with our own eyes, that the statement for some localities is quite within the range of possibility. The day has gone by when the beekeeper was the only apologist for this plant. To-day the experiment stations, the extension men, and even the ranchers and farmers, are all alike extolling its praises, and well they may; for sweet clover has redeemed and shown the possibilities of lands that hitherto have been worthless—lands that are bringing in price almost as much as alfalfa land. In spite of this showing, there is a professor who said that sweet clover was nothing but a noxious weed. That is about as much as some professors know. If they go west their eyes will be opened."

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* THE BEE WORLD, Feb. 1920, p. 182.

THE SPIRIT OF RESEARCH.

The **New Zealand B.K.J.**, in its March number, gives wide publicity to the Metal Foundation now attracting much attention in several countries abroad. Our contemporary comments: "The experiment was conducted under the most unfavourable conditions, being winter, with temperatures down to freezing point, and yet by feeding with sugar syrup, in itself unnatural to the bees, perfect combs were built. We congratulate Dr. Abushâdy on his success, and we believe he has given us an appliance that will be ranked with the extractor and moveable frame hive. The sheets of metal for making this foundation which were sent by Mr. Hooper Teed to Ruakura, are now being experimented with [†] at the State Apiary, and we will report results as soon as available

Dr. Abushâdy's paper, THE BEE WORLD, is, we suppose, the youngest publication on the industry in the English language, yet we are sure it is one of the best, particularly for the beekeeper who sees more in a hive of bees than the actual cash return, and is interested in the happenings within the hive; on the many functions of the queen, drones, and workers. What pleases us particularly is that the good doctor and his colleagues seem to prove everything; the fact that a certain opinion has been held and accepted as correct does not satisfy them; they prove it, and as the invention of the metal foundation exemplifies, sometimes they find the established ideas are not correct."

Speaking of Metal Foundation, one cannot help commenting on the tendency of leading American beekeepers to forget the accomplishments of apiarists in other countries. For instance, we are reminded of the work of Otto Schulz, the inventor of the foundation roller mill, who appears to have tried all sorts of metal mid-ribs and wires, although his observations were not accurate, for example he did not believe that a queen would lay on the bare metal.

THE CULTURE OF BUCKWHEAT.

Practicing what we are preaching, a quantity of buckwheat seed is being freely distributed to farmers at Benson, Oxon, who are willing to cultivate it properly. We share Mr. Harwood's confidence that once the conservatism of the British farmer is broken and he is taught to be interested in this valuable honey bearing and fodder plant (instead of red clover for instance), which has additional value as a provider of poultry food and vegetable manure, his interest will remain. We hear of so many lantern lectures on beekeeping, but never of any educational propaganda on the part of beekeepers amongst neighbouring farmers, for their mutual benefit.

OVERWORK AND DISEASE.

In the April issue of the **Am. B.J.**, Mr. Thos. F. Cobb has an article on I.W.D. on similar lines as his contributions to the current number of THE BEE WORLD. The Editors append the following comments: "If our correspondent is right, then there should be no disease in apiaries of old style skeps, which are allowed to breed according to their natural instincts. But, as far as we hear, the mortality by Isle of Wight Disease is universal in the countries under its influence. Yet the British hives are almost universally of small size.

On the other hand, the people with large brood chambers should have depopulated apiaries. The evidence is exactly the reverse, in this vicinity at least.

Mr. Cobb asserts that the prolific strains of poultry are more difficult to hatch and rear. The most prolific strain in this part of the world is the Leghorn chicken, and it is also one of the hardiest. It is true that special food, intended to increase the laying has a tendency to weaken the race. We grant this. But no one has suggested that a special food should be prepared for bees. The large hives give opportunity for the full development of the queen's prolificness.

We have no experience with Isle of Wight disease, but if prolificness has any baneful influence, then it should also promote foulbrood. The practice does not agree with this theory, which is after all, only a theory."

THE BEE-KEEPING LIBRARY.

The following excellent works, which we shall be glad to review in a following number are amongst the rich presentations which recently reached our Library: "American Honey Plants" by Frank C. Pellet, "Outapiaries" by M. G. Dadant, "Beekeeping for Beginners" by Fred C. Baines, "American Foulbrood" and "European Foulbrood" by Dr. G. F. White.

EARLY SPRING IN ENGLAND.

Under abnormal favourable conditions, it is not surprising to record the issue of a swarm during the first week in April as one of our lady members informed us (her message having been misplaced, we shall be glad to hear from her again). Our first swarm issued on the 24th of April. Unfavourable climatic change, however, will surprise no one.

A RECORD PRODUCTION OF QUEENS.

Signor Gaetano Piana, of Castel San Pietro, Bologna, Italy, is credited with producing, compatible with quality, about 600 queens per month (from May till September inclusive) in his extensive apiaries. His home apiary was visited in September, 1913, by Mr. C. P. Dadant, who described it in the **American Bee Journal** for March, 1919. Mr. and Mrs. W. Herrod-Hempsall and the late Mr. Smallwood were amongst leading British beekeepers who visited the Piana apiaries, of which a description appeared also in the **B.B.J.** for July 23rd and August 20th, 1914.

During last season the **Ministry of Agriculture** imported a large number of queens from Signor Piana. Failures in introduction on the part of some beekeepers and the misrepresentations by a certain clique of the Trade led to some wild tales about the non-fertility of imported queens, their non-Italian (!) origin, etc. We referred to this unjust misappreciation in the June number (p. 15). We are very glad to note that the Ministry have shown a right appreciation of the co-operation of Italian breeders, by placing again with Sig. Piana a big order for queens—in fact, a far bigger one than last year's. Mr. Joseph Price, Superintendent of the Staffordshire Restocking Apiary (and he is admittedly a very strict and conscientious judge) gives a high testimony to Piana Queens.

We congratulate Sig. Piana on his achievement and we sincerely thank him for his consideration to our members, of which we have just learnt as we are going to press.

HELPING STARVING AUSTRIA.

In the November issue of THE BEE WORLD (p. 125) we brought to the notice of the British public the "**Franco-Belgian Relief Fund**" organised by the **Am.B.J.** and remarked "we would have wished to see, in the name of international brotherhood amongst beekeepers, this fund extended to all suffering beekeepers in the war regions." Our American friends were not slow in responding. At a Buffalo meeting, says our esteemed contemporary, "a letter was read from C. W. Aeppler, of Wisconsin, enclosing another from the editor of **Bienen-Vater** of Vienna, Austria, stating that they were on the verge of starvation and begging for food orders to be sent from America. It is now possible, through the management of Hoover, to send orders for a number of different articles of food, to starving Vienna. The appeal stirred the generous feelings of the members present."

We are very glad to see such a noble humanitarian service finding fresh supporters.

[†] Our contemporary is obviously referring to crude specimens which may vary in merit from a metal division board to a rough imitation of metal foundation proper, the production of which did not begin till after the appearance of the above notes.—Ed.

The Arena: Letters to The Editor.

Criticism is a disinterested endeavour to learn and propagate the best that is known and thought in the world.—MATTHEW ARNOLD.

THE BRITISH STANDARD FRAME.

To the Editor of The Bee World.

DEAR SIR,—Referring to Mr. F. M. Claridge's letter in the February BEE WORLD, I did indeed, once upon a time, bark at the non-essentials of the British hive; its cleats; its porch. I would bark again if I thought it was any good. I feel that I might as usefully bark at the equator. It was the extra length of the lugs that roused me. The size of the frames was the result of a compromise: the extra lug is an impertinence. There is utility in the extra length of the lug, but it is the utility of a despot: it is the thou-shalt-not-have-a-single-walled-hive of beekeepers who think parochially of British Beekeeping. Supposing we decided to adopt the Langstroth frame as our standard, does anyone believe we would insist upon a longer top bar! The absurdity is clear to me and to many more. Having once gone wrong, must we go wrong for ever?

When we look all round the world and see the relativeness of the British hive: the triumphant Langstroth and the recessive British, it seems well nigh hopeless to expect any miracle to save the British frame. If we had a manufacturing firm as enterprising as Root's, the case might be different. I said that the superficial comb area of the British 10-frame hive was a very good shot at the universal requirements of beekeeping, and pointed out that many beekeepers of the United States agreed with that, as evidenced by the introduction there of the 8-frame Langstroth hive.

It is the Italian bee that is queering the pitch. The 10-frame Langstroth is in the way of being used double now: just fancy, a 20-frame hive. The wholesale importation of Italian queens that is now going on will put the British Standard to a great test. I look upon it as purely a beekeepers' question. If, e.g., the Langstroth would give me annually two lbs. of honey more than the British hive, I would scrap the British and import the Langstroth. It would pay me to do so. The acid test is to come. We have no reliable statistics yet. As for the beekeepers in heather districts, they will move very cautiously in the direction of a deeper brood frame. The advocates of the 16″ × 10″ frame need not worry about a new standard. They should in the next few years exhibit the points of the new frame. The beekeepers will soon settle the question if the new frame will without any reasonable doubt, increase the profits of beekeeping. That is the best propanganda. They must not only shew it is better than the British, but better than the Langstroth.

If the march of progress is towards a 20-frame Langstroth in America, and if a similar progression here is likely to take place through the introduction of Italian bees, I say the British Frame will win. It is the right size for handling. The Langstroth is too heavy. The British will put more of the early flow (Fruit Blossom, Sycamore, etc.) in the supers. It will put more of the late flow (Heather) in the sections. The only question is the clover harvest. If it is a 20-frame hive that is coming in, I would prefer the British; and thank goodness, less weight to lift, less back-ache than the Langstroth.

Yours faithfully,
Well Close, Stocksfield. J. N. KIDD.

THE BEES "FARTHEST NORTH."

To the Editor of The Bee World.

DEAR SIR,—What is the most northerly point at which bees have been found? The following extracts from **Peary's "The North Pole,"** Chapter VI, p. 60, gives, surely, the answer to the question. "In a little Arctic oasis lives the meagre and scattered handful of the Eskimo population—a little oasis along the frowning western coast of Northern Greenland, between Melville Bay and Kane Basin ......three thousand miles north of New York City, as a steamer goes; it lies about half-way between the Arctic Circle and the Pole, ...for one hundred and ten days in summer the sun never sets; for one hundred and ten days in winter the sun never rises....... In some places on this coast in summer the grass is as thick and long as on a New England farm. Here bloom poppies, with dandelions, buttercups and saxifrage, though to the best of any knowledge, the flowers are all devoid of perfume. *I have seen bumble bees even north of Whale Sound.*" (Italics mine.)

Yours faithfully,
Ellangowan, CLEMENT A. HARRIS.
Crieff.

THE DOMESTIC ECONOMY OF THE HIVE.

To the Editor of The Bee World.

DEAR SIR,—With reference to Mr. Stich's article in the January BEE WORLD, I should like to offer a few criticisms that come into my mind.

In the first place with all due respect to the late Mr. Frank Cheshire, it seems to me that there is no great difficulty, not only in contraverting what he says, but in proving him to have been absolutely wrong in his conclusions.

I will quote cases here in my own apiary. On March 30th, several stocks had ten 16″ × 10″ combs almost covered with brood. Now we may assume that those 10 combs contained at least as much brood as 10 standards quite full. Following Mr. Cheshire, we see that to produce this quantity would require 120 lbs. of stores—say 100

Now at that time no honey had been brought in, or at any rate only a very small quantity and I can certify that none of these stocks had more than 40 lbs. of sealed stores last October. It must also be borne in mind that brood rearing has probably been going on since Christmas which, if we are to accept Mr. Cheshire's argument, would require about another 50 lbs.

Of course, though Mr. Stich does not mention it, a very large quantity of pollen is used, and is brought in in considerable quantities in February. To me it looks as if the whole position of Mr. Cheshire is very untenable.

I cannot, Sir, go further than this in my criticism of Mr. Sich's letter because practically the whole of his argument is rested upon this statement of Cheshire.

To recapitulate: these strong stocks have, according to Cheshire, used 120 lbs. of honey or syrup to produce the brood in the hive on March 30th, and an additional 40 lbs. say, to produce bees from the commencement of breeding up till March 7th. They had on March 30th **about** 8 lbs. of sealed stores left and, on Oct. 1st, I will guarantee they had not more than 40 lbs. of sealed or unsealed stores and at that time they had 5 or 6 combs with brood.

Another case I have is that of a small nucleus that was packed down on three 16″ × 10″ combs. These combs were as full of stores as they could hold, while containing a large patch of brood on both sides of the middle one and a smaller patch on one side of each of the other two. This could not have amounted to more than 15 lbs. of food. On March 30th, I found all three combs with brood on both sides and the centre one almost completely covered with sealed brood. I should judge that about 6 lbs. of stores remained.

Don't you think, Mr. Editor, that people are apt to accept the sayings of Cheshire and others rather too much as uncontravertable?

The probability is that these men, had they lived to the present day, would have altered their views in many things.

Yours faithfully,
Brightwell, R. B. MANLEY.
Wallingford.

BEE FARMING.

To the Editor of The Bee World.

DEAR SIR,—Mr. Harwood's interesting notes on Bee flora have given pleasure to many of us in the past, and those of us who take a wide interest in practical beekeeping will always enjoy his articles.

The practicability of his system of bee farming I am unable to criticise, but after reading Mr. Pellett's "**American Honey Plants**" a field of possibilities is opened of which I never dreamed.

That the relations between crops and bees has never been sufficiently appreciated is evident. I have never heard, in this country, of a large farmer keeping bees and studying them in his crops. This, let us hope, is one of the prospects we can look forward to, and one of the objects which renders necessary an organisation such as **The Apis Club**, for the purpose of enlightenment through educational propaganda. It is really work for the State, but the State only follows the public and does not lead thought.

Where I wish to join issue with Mr. Harwood, and I feel sure that I am voicing the feeling of a vast majority of beekeepers in doing so, is in absolutely disagreeing with his description of beekeeping as " a parasitic industry."

A parasite is " an animal or plant subsisting at the expense of another organism." At the expense of what organism does beekeeping subsist? We can afford to ignore any question of benefit derived from pollination, and confine ourselves exclusively to the question as I have put it.

There is no evidence whatever that crops suffer from the visits of bees, nor is there any evidence that any of the natural tendencies of bees to reduce the bulk or quality of any plant from which pollen or nectar is gathered.

The word parasite is an unpleasant word which carries with it stigma. If none of us is to keep bees unless he has broad acres for their flight the industry is indeed doomed.

Apiculture is likely to remain, for some time in this country, a side line, with people who have but small holdings; it is, in fact, to small holders that beekeeping offers the best opportunities, because our flora do not generally warrant a large number of hives in one apiary. To dub beekeeping under these conditions as a " parasitic industry " is both misunderstanding the word parasite and giving the vast majority of beekeepers an unfair appellation.

It is unfortunate at a time when there are good chances of developing the industry that our friend should have marred the excellent work which he has done by such an expression.

The articles in the January and February issues, particularly the reference to buckwheat honey, are most instructive, and I sincerely hope much good may come as a result of the interest they are sure to arouse.

St. Cross, Yours faithfully,
Orpington, Kent. C. P. JARMAN.

RANDOM STATEMENTS.

To the Editor of The Bee World.

DEAR SIR,—In the **British Beekeepers' Guide Book** (19th edition, p. 24) it is definitely stated that bees headed by a queen under two years old are less prone to swarm than those having an older queen. In **A Modern Bee Farm** (May 1914 edition, p. 297) it is laid down as an axiom that the presence of a yearling queen actually prevents swarming, sufficient brood space and ventilation being given; and when the **B.B.J.** reviewed this book, no objection was raised to the statement, but, on the contrary, the Beekeepers of England were given to understand that they could not afford to be without the book. We thus have two practically official assertions from the **British Beekeepers' Association** that bees are less inclined to swarm under a young queen; yet a request by me for information as to experiments on the subject, which appeared in your October number, still remains unanswered. Am I to conclude that such well-known British authorities as Messrs Cowan, Simmins and W. Herrod-Hempsall have accepted the above proposition as an axiom, without first satisfying themselves of its truth?

The case is serious. We now all (?) admit that the **B.B.K.A.** has hampered beekeeping in England by the adoption of too small a standard frame, the result, one must suppose, of lack of previous experiment. It is no defence to say that the Standard was chosen to suit the English bee; for the various operations advocated by the **Guide Book**, with a view to giving extra space, clearly show that it never was suitable for the English bee. And further, according to Mr. Manley (in your issue of December) and others, it would seem that the Association has also given us a wrong spacing for frames; and one is left wondering in what other ways the Association may not have been one of the contributory causes of the shameful backwardness of the industry in this country. For instance, we all know that, in any matter affecting bees, the **Ministry of Agriculture** turns for guidance to the Association, which must, therefore, to some extent, have the ear of the Ministry. What steps, then, did the Association take last year to secure an adequate allotment of sugar for autumn feeding? And if steps **were** taken, why did not the Association inform beekeepers in good time of the unfavourable decision of the Government?

Unless the Association can justify itself, I question whether it would not be best for it to dissolve, leaving room for some other body to take its place as unofficial advisers to the Government. One cannot seriously maintain that its semi-official organ, the **B.B.J.** is of any real benefit to the industry. Possibly, however, it has improved of late—I have given up taking it in.

I trust, Mr. Editor, you will find these observations a sufficient reply to your defence of the **B.B.K.A.** and its organ.

Brewoods Close, Yours faithfully,
Cookham Dean. H. CAMPBELL.

[Although Mr. Campbell's letter, in our opinion, is very open to reply, we prefer to leave this thankless task to any leader of the **B.B.K.A.** who cares to do so. Our sole aim is to give publicity to the views of all responsible writers without encouraging party strife. We consider our previous editorial comments on the subject matter of this letter an adequate answer. We need not therefore repeat them.—Ed.]

THE WINTERING OF EGYPTIAN-ITALIAN BEES.

To the Editor of The Bee World.

DEAR SIR,—The warm weather we have had has done wonders for the bees, although I know their consumption of stores has been heavy. I am glad to tell you that my Egyptian-Italian nucleus has wintered well **without** my extra care, and they have been very active lately taking in lots of pollen.

Yours faithfully,
Fairview, H. WATTS.
Loose Road,
Loose, Nr. Maidstone. April 4th, 1920.

MALIGNANT DYSENTERY AND OVERWORK.

To the Editor of The Bee World.

DEAR SIR,—I notice in the January issue of THE BEE WORLD you have quoted some of the remarks from the pen of the Editor of **The American Bee Journal**, on the theory of " overwork and disease." He is by no means taken with the suggestion, and as I consider it of the utmost importance to get such experienced minds concentrated on this subject of overwork, may I be allowed a short reply to some of the points he raises?

He asks: " Are the chicks hatching from a prolific hen, properly fed, any weaker than those from an inactive hen, slightly fed?" I do not quite understand how the difference in feeding enters into them atter under discussion. All I have stated in this connection is that, while we have been breeding certain strains of fowls primarily for egg production, we have to a large extent succeeded in our endeavour, but we have found that, as prolificacy **increased** so stamina and general hardiness **diminished**. This is well illustrated when incubating chickens on a large scale. From the prolific breeds, such as the much-boomed Rhode-Island-Reds, we find a higher percentage of " unfertiles," more chicks die in the shell, and those that hatch are more difficult to rear.

Nature will not allow excessive reproduction. Our methods of breeding have been intensive. Invention and discovery have followed fast upon each other's heels, ever directed towards more and still more intensive cultivation. This much will be readily admitted, but whether we have at the same time, reduced their vitality is perhaps not quite so apparent. One cannot tell from the look on a bee's face if her heart is beating sixty to the minute, and those symptoms of degeneracy so noticeable in the fowl are not so easily recognised in the bee, but I maintain that the same law applies to bees and fowls, and so long as we continue to disregard that law, forcing them to the utmost limit of production, so long shall we suffer from Nature's reactions, such as I consider the present I.W.D. to be.

To my mind, Mr. Dadant's most important argument occurs in a passage you have not quoted in THE BEE WORLD. He reminds us that we are using frames much smaller than those of America and suffer I.W.D., while America has not experienced it, suggesting that if we adopt larger frames, we too shall remain free, apparently under the conviction that " large frames " and " overwork" are synonymous.

But I have been a believer in and a user of 16″ × 10″ frames for years, and would have nothing else but for the difficulty of buying bees on anything but standards. The evil effects of overwork can and do occur just as easily in a tiny nucleus, as in a large hive. The methods are more dangerous than the size of the hive. Consider a moment the breeding of a small colony, and let us suppose for the purpose of argument, that under normal conditions, one nurse-bee attends to the wants of two larvæ. If we now create abnormal conditions by any of the various means of stimulation, it means that each nurse-bee may be called upon to provide for four, or even six larvæ. Is it not feasible to suppose that the food fed under these conditions is not as carefully prepared and digested, or so liberally supplied as in normal times? And, when one remembers that quality of food was responsible for the huge difference between queen and worker, it is easy to realize this matter is of vital importance to the constitution of the developing larvæ.

But nurse-bees also feed the queen, so that she too is getting poor food and not enough of it and though she may only be laying a few hundred eggs a day, they cannot be up to the normal standard.

But even if I could find no reasonable explanation of **why** overwork should be a danger, I should still believe it was in danger, because of the **circumstantial** evidence connecting it with I.W.D. This evidence has been dealt with elsewhere, but before closing I must just call your attention to the latest instance.

Nearly a year ago, Mr. H. M. Stich, in the **B.B.J.** suggested the experiment of forcing a colony with the deliberate intention of inducing an attack of I.W.D. If you will turn up the **B.B.J.** for January 22nd of this year, you will find the result of such an experiment. Mr. Edwards forced a colony in true text book style, with this idea before him, and sure enough, I.W D. broke out and practically destroyed it.

I suggest to Mr. Dadant, and indeed to all intelligent minds, that this is no coincidence and that it warrants the attention of every thinking man and woman, having the cause of the bee at heart.

Yours faithfully,
THOS. F. COBB.

33, Bevan Road,
Plumstead.

SIMPLE INTERCHANGEABLE HIVES.

To the Editor of The Bee World.

DEAR SIR,—It is very pleasing to see that someone has at last broken away from the conservatism of the British Bee World in the matter of hive design, and Mr. Manley is to be congratulated on his break away from the rut, especially in obtaining two reputable firms so widely separated to make the hive on interchangeable lines. This innovation in bee appliances should be a great benefit to purchasers, as they can get their supplies from their nearest maker and save carriage (a considerable item in these times).

Personally, I think the hive would be improved by some sort of a wind check at the joint of the chambers, particularly for exposed positions.

It may be argued that nothing of the sort is used on the other side; but it should be borne in mind that America makes some pretentions to a settled climate, whilst here we only seem to get a varied assortment of weather, and moreover our wintering methods are different.

I would suggest that a rebate at top and bottom (as shown in Fig. 69) of each chamber would be an advantage, serving as a definite fixing to each chamber as well as a weather check, for, no matter how well seasoned the material used, there is bound to be some shrinkage as time goes on.

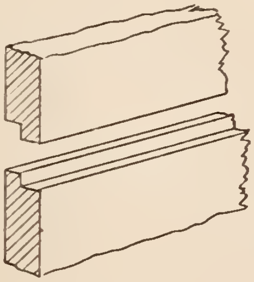


Fig. 69.

Mr. Manley's notes on the American size, 1⅜ spacers, are interesting, in view of the fact the Dadants are advocating the 1½" spacing as a preventative of swarming (for one thing) used in conjunction with deep frames.

The type of spacer mentioned has many objectionable features, not the least in the writer's opinion is that it allows the bees to stroll around among the frame ends to the discomforture of the manipulator if he should happen to strike the "hot" end of a worker, also it is not easily detachable (being secured with brads, I believe) if close spacing is needed. A better way to meet the case would be to have a detachable spacer both top and bottom of the frame (as used on Adminson's Metal Comb.)

However, what is successful in one beekeeper's hands may be unsatisfactory in another's, and it is up to each one to find what suits his purpose best, stick to it and have the courage of his opinions as Mr. Manley evidently has. Good luck to him.

Yours faithfully,
T. I. ROBINSON.

10, Barnes Cray Walk,
Crayford, Kent.

THE FUTURE OF THE METAL COMB.

To the Editor of The Bee World.

DEAR SIR,—We feel that the large measure of success that the aluminium comb will attain in the United Kingdom is due to the unselfish efforts of you and your associates.

You have no doubt heard of Dr. Bonney, of Buck Grove, Iowa, whose name is seen repeatedly in various magazines devoted to bee culture, and we cannot resist relating to you the incident leading up to his conversion to the aluminium comb. Some time early in last year he wrote an article for **The American Bee Journal** in which he stated the aluminium comb was a failure. We immediately wrote him and suggested that possibly his experiments with the combs were not of sufficient extent to warrant an opinion to be expressed by a man of his standing in the Bee World. One of his open-mindedness and knowledge did not hesitate to give them a longer and more careful trial. After using these through a full season, he readily expressed the considered opinion that the metal comb has come to stay.

We note with a great deal of interest your observations on the Metal Foundation and can see no reason why this invention should not receive considerable use among beekeepers.

Yours faithfully,
C. B. ANDREWS.

The Aluminium Honeycomb Co.,
Pasadena, California,
U.S.A.

WINTER OBSERVATIONS.

To the Editor of The Bee World.

DEAR SIR,—In the light of the present discussion on hives, I take the liberty to say that for its sphere of utility, "The Insulator Hive" is the **best** that I have ever seen. My thorough appreciation of the hive at once induced me to repeat my order.

My stocks have wintered remarkably well, with the exception of one with an old queen (July 1918) which did not commence to lay when the bees balled her in late February and have gone out since.

I have wintered all my baby nuclei, except three, on 7" × 7" frames, some of them on just 3 frames of this size. The three lost all had unmated queens and were very weak. Two of these died from cold and the third survived till March. I wanted these for experimental purposes (early drones to impregnate eggs!). The third nucleus, which survived till March, was peculiar. The queen did not lay and the bees became very excited. She finally came out for a mating flight and naturally was not mated. Two days afterwards the bees commenced to crawl and shewed several symptoms of I.W.D. I saw what the trouble was and gave them two combs of eggs. Within 3 days, the bees were healthy after feeding on hot syrup, killed the queen and raised queen cells. This was at an out-apiary kept for experimental work.

I am convinced from my observations in this district that not ten per cent. of the losses attributed to I.W.D. occur from true disease, but are caused by excitement, injudicious feeding and other causes of the same class as has been preached editorially in THE BEE WORLD on repeated occasions. The greatest blunders are generally committed with nuclei, as very few people indeed seem to have any idea how to get good results from them.

Yours faithfully,
ARTHUR M. STURGES.

Shenstone,
Hartford, Cheshire.

WINTERING IN DOUBLE CHAMBERS.

To the Editor of The Bee World.

DEAR SIR,—Bees kept in this part of Scotland have the opportunity of foraging in England as well, since the boundary line is little more than a mile away.

When starting beekeeping in this district, my stocks were temporarily placed in a neighbour's orchard, but I had visions of them settled down in the five-acre field rented by me for that and other purposes.

But field and orchard were sold, so the bees had to go; and no other place being available, I put them in a fairly roomy loft where they did well in honey gathering during the season 1918.

And then I had my first experience of what a winter outbreak of disease is like, every one of my stocks going down with I.W.D. I disinfected everything and made a fresh start with healthy bees, keeping them free of disease by regular spraying, and from four stocks secured comb honey that sold for over £25. No more casualties occurred; and I have wintered every stock safely, while the other apiaries here have been completely destroyed, and apart from mine there is only one stock of bees left alive in the district.

I attributed my success to following the advice given by Smith, of Cambridge, requeening early in the season with vigorous Italian blood and wintering every colony in a double-storey with abundant sealed stores.

It is quite clear that given a double B.C. hive with ample stores in late August any good queen will produce a large population of Autumn bred bees, and these young bees are more likely to winter safely than those that have exhausted themselves in securing the honey crop. Heavy Autumn feeding to attain the same end has been advocated in THE BEE WORLD, and also by Simmins, but needless to say the average beekeeper cannot get sugar in sufficient quantity for the purpose.

Possibly some may think that, instead of doubling a hive, it should rather be contracted, so as to crowd the bees for warmth in winter. But a single-storey hive cannot be so warm in winter as the 18″ deep doubled brood chamber, which allows the bees to cluster high above the entrance during cold weather.

This approaches to the arrangements made by the bees in a state of Nature when they settle down for winter on empty combs with the season's gathering of sealed honey stored above them.

It seems evident then that a chamber of stored combs should be put on each colony after supers are removed, and this can be done by uniting swarms with their parent stocks each autumn. Young Italian fertiles should be available in nuclei during the swarming season, and the little lot with its queen joined to the swarmed stock after all queen cells are removed. When honey gathering is over, remove the old queen and re-unite by doubling, placing the heaviest combs above.

This arrangement provides that deep narrow comb surface best adapted to the bees' requirements during the months September to April inclusive, and followed by early summer division, supplies two strong colonies in correctly proportioned brood chambers for the best results in section honey production. That the foregoing is not mere theory is plainly evident when I look across the fence at my neighbour's line of silent hives and contrast their desolation with the teeming activity of those healthy and wealthy doubled colonies.

Yours faithfully,
Gretna, Carlisle. J. M. ELLIS.

A LIGHT FROM JAPAN.

To the Editor of The Bee World.

DEAR SIR,—I am sorry to hear again from my friends in England of the ravages of I.W.D. In Japan, we do **not** experience not only I.W.D., but also both types of foul brood.

Some beekeepers in Hokkai-do, our Northern Island, habitually migrate to Kago Shima, our Southern district. They have to cover with their bees about 2,000 miles!

In January, the "rape flower" is to be seen in the Southern region, whilst the Northern district is covered with snow some feet deep.

During the latter part of May these migratory beekeepers return to their homes with increase in bees and cans of surplus honey.

We have only one big honey flow and one long drought in most parts of Japan. Generally speaking, our principle honey flow comes from the **Genge** (Astragalus Senicus) which is cultivated in our rice fields. The genge blossoms approximately from April 20th for a full month. It is then cut for green manure for the rice plants. After the genge season is over, honey drought occurs for some long period.

I hope to tell you something more about Japanese beekeeping on another occasion. On my part, I very much like to learn through THE BEE WORLD.

Yours faithfully,
Tara, Gifu-Ken, YASUO HIRATSUKA.
Japan. Editor, **Yo-ho-no-Tomo,** (The "Friend of Beekeepers.").

ELIMINATING THE "ISLE OF WIGHT DISEASE" BY INDEPENDENT BROOD INCUBATION.

To the Editor of The Bee World.

DEAR SIR,—With reference to the report which appeared in the December BEE WORLD giving particulars of the rescue of a stock of bees by means of my "Chicken brooder" plan, the following supplementary notes may interest your readers. It is now April and the rescued stock (which I designated No. 1) is alive and promising well. Apparently it is quite normal. The other stock designated No. 3 which was alive when I wrote my report for THE BEE WORLD was found to be dead on 23rd February. It was very inactive during the autumn and winter but I preferred to let it have every chance; even to the giving of a cake of candy, so as to be sure (?) it would not die of starvation. The death of this stock was not necessary to prove that by artificial swarming and the transfer of flying bees, the Isle of Wight Disease cannot be got rid of entirely from a stock of bees. This has been tried and failed over and over again. It has some value however in regard to the stock rescued by my plan as the record is now more convincing. There was some doubt about No. 3, but I will now say that it was my opinion that I.W.D. appeared in the swarm (No. 1) and the divided stock (Nos. 2 and 3) simultaneously or nearly so, which agrees with the usual experience.

You say that my plan does not eliminate disease except (perhaps) in the treated stock. The same can be said of the Foul Brood treatment by the destruction of brood combs and hive contents; but I would add that my plan for I.W.D. is cheaper than the Foul Brood manipulation, as the adult bees only are sacrificed in the one case, whilst in the other there is much expense in replacing combs, etc. North country beekeepers and all beekeepers in heather districts will benefit most from my plan, if successful, as a treated stock will be ready in most cases for the late harvest at the moors.

The **Ministry of Agriculture** have been good enough to criticise my plan. The criticism is from their Technical Officer on Beekeeping and he has made a very good point. He suggests: "at the time of transference there will be a number of young bees with the cell cappings wholly or partially removed and contact with the old diseased bees will have taken place." Taking this at its very worst it is not a serious flaw, because the bees that have broken their cappings can be picked out during the manipulation; or easier still, the combs could be cleared of the newly hatched bees, say an hour after being placed in the chicken-brooder. I do not however worry about this danger. I rely a great deal upon Dr. Rennie's experiments in transferring brood combs from diseased to healthy stocks. If there are any other beekeepers who feel it will do good to criticise my plan I shall be glad to reply to them, but how much better would it be if they would decide to experiment, and report results to THE BEE WORLD.

It is said that my plan is not practicable because of the great cost of purchasing chicken-brooders. This is not correct. I made use of a chicken-brooder because it was handy. First let us find out whether this is a method of eliminating disease from a stock and then our bee appliance makers will put on the market the necessary adaptation of Dr. Abushâdy's "Brood Hatching Chamber" and I would point out to some of my critics that the Independent "B.H.C." for this purpose will be merely a box and a lamp and that there need be no extra protection against the weather, as the incubating can be done indoors.

There was a letter the other day in the **Daily Mail** from a clergyman at Newbury, stating that the I.W.D. was making a wholesale clearance of bees in his neighbourhood and calling upon scientists to produce a "cure" for the disease. I would point out that although science did ultimately aid beekeeping in combating Foul Brood, practical beekeepers, e.g., Moses Quinby and others, had already evolved the manipulations which successfully gets rid of that disease. In the case of Isle of Wight our scientists have failed to give us an acceptable diagnosis, and all along, the beekeepers having failed to get any success in manipulations, have devoted their efforts to antiseptics which at the best are a mere palliative.

This season the beekeepers will, I hope, put faith again in manipulation, in the direction indicated in my plan ; and let me add, don't forget to report to THE BEE WORLD.

Yours faithfully,
J. N. KIDD.

Well close,
Stocksfield.

APIS FASCIATA IN ENGLAND.

To the Editor of The Bee World.

DEAR SIR,—My own two stocks of Egyptian-Italians have wintered very well, and are now (April 19th) getting strong, this being their natural swarming season in their native land. They did not receive any proper attention during the autumn, and one of them was in fact a nucleus on four frames.

I have been particularly interested in observing the persistancy of their workers in flying, even in adverse weather. Your comment on their failure to find their hive entrance in cool weather has not been noticed, perhaps on account of the rather rough and ready method of securing the slides, i.e., by the use of a half brick on each side of the entrance, which gave a fairly certain guide to it ; yet in the other colony, the entrance is merely a $\frac{1}{2}'' \times 2''$ hole cut in the bottom edge of a converted skep-super. Such are the conditions under which these bees have wintered, in a very exposed position, open to every wind that blows, except the north, which we very rarely have here. The reason for the use of such makeshifts is found in the shortage of hives, at the time I was building up the bees from one-frame nuclei, and they have not yet been transferred.

Yours faithfully,
F. M. CLARIDGE.

Copford, Nr. Colchester.

BEEKEEPING IN SIERRA LEONE.

To the Editor of The Bee World.

DEAR SIR,—It may interest your readers to know that beekeeping in Sierra Leone is quite an industry with the natives who keep them purposely for the wax which finds a ready sale at the port of the Colony—Freetown.

Their methods are of course, crude and some interesting experiments might be made with some modern methods.

The native bee is a small one, and I am not sure that it has received sufficient entomological interest.

Yours faithfully
W. D. BOWDEN.

Batkanu,
Sierra Leone,
West Africa.

PROGRESSION OR RETROGRESSION ?

To the Editor of The Bee World.

DEAR SIR,—The climate here is very different from that of America. As far as my own experience (of 16 years to be accurate) goes, I have always found bees in singled-walled hives to winter better than in double-walled, and consequently no amount of **argument** will make me think otherwise.

The hive Mr. Claridge disparages is, I suppose, the one made to my plan. Many experienced men think very well of it. I mean men of long experience.

As to the U.S.A. taking up double-walled hives, this has no bearing on the subject. They are built of two thicknesses of $\frac{3}{8}$ inch deal packed between with non-conductor material, and their object is to withstand great extremes of dry cold. This cold goes 50° below zero often. These hives are not in the least like the Cowan or the W.B.C. in either construction or principle.

With regard to spacing, I have practised close spacing for a good many years with great success, and to me it has many advantages over the wide spacing. I think that there will not be much trouble if the frames are drawn a little apart for wintering.

No, I do not think the extra amount of honey in the odd $\frac{1}{12}$th of an inch in the thickness of each comb has much value, and as Mr. Claridge says, where the spacers with double contact are used, they will probably reduce this $\frac{1}{12}$th down to about $\frac{1}{20}$-$\frac{1}{24}$th of an inch. I think he is splitting hairs. Now the metal end which spaces $1\frac{9}{20}$ inch, usually spaces much more when messed with propolis and thus has the same tendency as the other spacer.

At any rate I will undertake to show Mr. Claridge next spring as strong stocks in my apiary and as forward, wintered in "Manley" hives spaced $1\frac{3}{8}''$ as Mr. Claridge can show me in his apiary treated in any way whatsoever.

I do not, of course, know how much beekeeping experience Mr. Claridge has ; but I have thought his writings show sometimes a tendency to accept theory as fact unquestioned. The question is this : Has Mr. Claridge given the two spacings a thorough test side by side as I have ? Has he given the single-walled and double-walled hives a similar test over say 5 years ?

If close spacing is desired, it **cannot** be accomplished with the W.B.C. end, except in theory, as Mr. Claridge must very well know. Let him try doing it with a strong stock. When I say "cannot" I mean of course, cannot with any reasonable facility.

With Mr. Claridge's last paragraph I entirely agree. I hope all will pause and think before they change over. I paused and thought myself for the best part of 10 years, but am going ahead with it now.

By the way, what can Mr. Claridge mean by saying that wide spacing increases ventilating facilities ? I **can't** see it. When spaced wide, the bees immediately lengthen the cells where honey is, so that unless the brood actually touches the top bar nothing is gained and, on the other hand, combs are much more apt not to be straight.

Yours faithfully,
R. B. MANLEY.

Brightwell,
Wallingford.

CONCRETE HIVES.

To the Editor of The Bee World.

DEAR SIR,—I have recently devoted much time to the making of reinforced concrete hives and, if I am not trespassing too much upon your valuable space, I should like to make the following observations :—

This class of hive, to my mind, offers several advantages over wooden ones. Amongst them are :—

(1) No painting is required to preserve them or render them waterproof.
(2) There are no joints to spring open, admit moisture or lodge dirt.
(3) The material gives better heat insulation.
(4) Concrete improves instead of deteriorating with age.
(5) As one shape is as easily moulded as another, hives need not necessarily be built up of flat pieces as is the case with economical wooden ones.
(6) Sizes are not limited by the widths in which the wood can be produced.

The drawback of weight, usually associated with concrete, has been overcome by the use of an exceedingly light material in the mixture and hives easily handled by manipulators are now on trial.

The design adopted at present is the W.B.C. pattern. Up to now, only moulds for stand, outer walls and roof have been made and the inner boxes are made of wood. Later on, it is intended to make the inside boxes of similar material.

A question to which I have given much thought has been that of hives having deeper frames than the British Standard. To me, it appears that if a deeper frame is to be adopted in any quantities in this country, it must be one that does not call for the scrapping of large numbers of existing hives, and, for this reason, I agree with the writers in THE BEE WORLD who urge that the present dimensions of the brood chamber should be retained and only the depth increased.

Might I suggest that, instead of increasing the depth of the frame to 12″, as has been suggested, it should be increased to $11\frac{3}{8}''$, that is, to twice the depth of the present standard super frame plus a bee space of $\frac{3}{8}''$. If this were done, two shallow super cases could be used to hold a set of the new frames, whilst anyone wishing to have a deeper brood nest for wintering could (by using three shallow boxes, and arranging a deep frame over a shallow one alternatively with a shallow frame over a deep one), go a long way towards removing the present objection to the bee space between the frames, as the gap would not be at the same level on adjacent frames.

Yours faithfully,
104, Dudley Road, E. C. HIPKINS, B.Sc.
Tipton, Staffs.

[Nearly two years ago we discussed with Messrs. Clement & Johnson the utilisation of one of their chemical by-products in the manufacture of moulded hives. The substance is most suitable for the purpose, but unfortunately the cost of production under the present industrial conditions is not small. A composite concrete hive as suggested should find a demand if well made and marketed at a reasonable price.—Ed.]

BEE DISEASES LEGISLATION.

To the Editor of The Bee World.

DEAR SIR,—Ever since legislation was first mooted in the **B.B.J.**, I have closely watched the discussion pro. and con., and it appears to me you are no nearer a solution of the question than you were 20 years ago, and from present appearances it is doubtful whether you will reach it in the next 20 years. I am much surprised at your endorsement of the action of the **B.B.K.A.** in "purposely avoiding. at present, offering any suggestion on the form which legislation for bee diseases should take" in England. The Editor of the **B.B.J.** takes the same view. What is, or what should be the position of the **B.B.K.A.** in the beekeeping industry of Britain? Is it not to watch over the interests of the industry and in times of trouble to suggest a way out of it, and not only to suggest the means of overcoming it, but **to take the lead in doing so?**

From this point of view, it is the duty of the Association in conference with its branches to decide whether legislation is needed or not, and having decided on the line to take up, to act vigorously in the proposed direction. If in favour of legislation then the **B.B.K.A.** should draft a Bill, and not leave it to a Board that has, as Mr. Barratt pointed out in your November number, "displayed ignorance and incompetence," in such matters. The **B.B.K.A.** is simply following, not leading, for who should know better the needs of the industry than its supposed representative institution? The request for expression of opinions for and against legislation through your journals is playing into the hands of the authorities who have shown "ignorance and incompetence," who are likely to take every advantage of adverse criticisms. As for the fears expressed of what may occur from incompetent inspectors, etc., etc., you are creating a lot of bogeys that is bound to frighten your half-hearted beekeepers. Select competent men, and you will find the bogeys vanish at once. One would think from some of the letters of objection, that the men appointed as inspectors would be chosen from the most disreputable of their class, or would at once develop destructive instincts, and glory in giving as much trouble as possible—all fiction.

It has been suggested in the **B.B.J.** that N.Z. legislation is a failure. Nothing of the kind, until lately we had not kept pace with the expansion of the industry in the matter of the appointment of more inspectors due to the upset of the war, now we are making this good by largely increasing the number. The following figures given officially by the Director of the Department will show the advantages of legislation—the figures have been officially published.

Value of annual output of honey and wax	1911,	£31,000
,, ,, ,, ,,	1919,	£250,000
Capital invested in hives, bees, machinery and land		£1,013,600

Yours faithfully,
Epsom, Auckland, I. HOPKINS.
New Zealand.

ACCIDENTAL QUEEN CELLS.

To the Editor of The Bee World.

DEAR SIR,—In the **American Bee Journal** for April, there is a letter by Mr. Arthur C. Miller, in which he refers to rearing of queens in a stock in which the brood nest had been divided by an old empty comb.

I had occasion to remove a stock of blacks from one hive to another and in so doing, divided the brood nest into two with an empty comb. The original queen has confined herself to the combs on one side of this empty one and filling all empty cells with eggs; on the other side, however, there are no eggs, but a queen cell is being raised. At first sight it appeared to be a case of supersedure, but I am convinced now that it is only that the queen will not leave the warmth of the brood combs and risk being chilled, during the present unsettled weather (April).

THE BEE WORLD is far and away the most interesting of the periodicals relating to bee culture, and I take the opportunity of the close of its first volume to wish it again every success. As a British apiarist of over forty years studious experience, I sincerely believe that the magazine richly deserves the whole-hearted support of all **thinking** beekeepers; the others do not matter.

Yours faithfully,
73, St. John's Park, H. E. C. CARTER.
Blackheath, S.E.3.

BRITISH AND AMERICAN EQUIPMENT.

To the Editor of The Bee World.

DEAR SIR,—As one who was formerly a British beekeeper and hopes shortly to become one again, having in the meantime had some five years experience of American methods in different parts of the States, allow me to congratulate you on your interesting, scientific and progressive Journal. It would be a reproach and a disaster if such an institution did not receive full support from all members of the Craft. To me it is a great pleasure to read a bee periodical full of evidence that British beekeepers are not the hide-bound, cave-dwelling conservatives one had almost come to believe them.

A very few years ago to suggest that there was any need of changed standards and methods was to evoke contemptuous, patronising incredulity. Such a critic had obviously become infected with that cock-sure self-sufficiency which every good Englishman knows to be an American characteristic. "Yankee trash" was the expression applied by an official of the Board of Agriculture to the hive which produces about four-fifths of the world's apiary-honey. Impelled by angry impatience at the equipment offered to disabled soldiers as a means of livelihood, I once wrote a letter criticising gable-roofs, cloth quilts, elaborate porches and stands, plinthed double-walls, multiplication of parts, the W.B.C. end (as opposed to contiguous or two-point shoulders), the small frame and brood-chamber, and other British foibles—in the light of my American experience—but I failed to find a receptive editor among the periodicals dealing with rural and agricultural interests. Indeed, beekeeping in England has never attained to the dignity of being considered an agricultural interest; I should estimate its status as being rather beneath that of ferret breeding, and about on a par with the manufacture of terra-cotta garden vases.

Every British bee man I talked with produced the same argument and the same formula. "The British hive has been evolved by British conditions; it is, therefore, the best for us and needs no change." The two-handed broad-sword was evolved by centuries of Japanese military conditions, but they took to European rifles and guns before going to war with Russia!

I met one man, the head of a large and successful business, a keen beekeeper in his leisure hours, who approached the matter with the open-minded inquisitiveness one would expect, but, after conceding nearly all my points, he objected, "Our people want something picturesque in their gardens. They would never take kindly to those plain, box-like affairs."

Here you have the real issue in a sentence. Here you have a more serious matter than **Nosema Apis** (which, by the way, is found here in normally healthy bees). Is British beekeeping to remain a branch of garden furniture, or is it to pass into the hands of those who will "run" it as a serious industry? Is a large, cheap, simple, machine-cut hive, suitable for modern queens, to be adopted as standard, or is this first condition of commercial apiculture to be banned by Aunt Matilda's aesthetic prejudices?

The point I should like to emphasize is that there is nothing to discourage addition and substitution, in infinite variety, when once you have adopted such a standard hive as the kernel around which fads and fancies should be built. Let Aunt Matilda and her friend, the retired admiral, add ecclesiastical roofs, pretty porches, coloured alighting boards, tasteful stands, fluted pilaster legs, or anything else they blooming well please, but don't ask, don't force the cottager, the ganger, the disabled soldier, above all, the professional to purchase this paraphernalia. The only "cottager's hive" should be the best, the standard hive, where the ratio of return to outlay is highest.

And, one more don't, don't continue publishing books, articles, and catalogues that mislead the beginner and continue the folly or support the self-interest of a few.

Take the W.B.C. hive. Count the number of parts, then again, the number of hand worked parts, I have only my memory to go by, but I believe the number is startling. And isn't all this elaboration fitted by mitre joints instead of dovetailing?

If you insist on double walls, plinths are useful, but there are large commercial apiaries, where temperature varies from 32° to 100° F. in the shade, that need nothing more than $\frac{7}{8}''$ single-walled hives. I refuse to believe that elaborate double walls are indispensable in temperate England. It is astonishing to hear critics talk as if bees were not comfort-loving creatures who disliked draughts and damp; these will go to endless trouble designing telescopes and plinths where a little propolis keeps all snug.

The controversy over frame dimensions seems now to have reached a stage where the Simmins $16'' \times 10''$ is likely to be adopted by the progressive element. To me this is a little regrettable. The Langstroth hive has a comparatively broader base, does not build into a skyscraper, is manufactured by the million, and is standard, generally, in our own colonies.

I will conclude these remarks with an unpopular suggestion. Let a new society of beekeepers be formed, frankly hostile to the **B.B.K.A.** and aiming at drawing off its members. Let such a body tax itself voluntarily on a hive basis, buy (and later, manufacture) its own standard equipment, sell its products co-operatively after the fashion of the Colorado and California Associations, having an eye, above everything, to the propagation and to the jealous preservation of beekeeping as a serious industry. The middlemen, the large retailers, the fancy hive makers, the cave-dwellers, will do their best to down it at the start. In the States mentioned above absurdly generous prices were given to blacklegs, but the majority stuck loyally together and have been rewarded with complete success and the full value of their labours.

Yours faithfully,

Achord's Apiaries,
Fitzpatrick, Ala.,
U.S.A.

JOHN PROTHEROE.

[We need only remind Mr. Protheroe that at the Annual Meeting of the **B.B.K.A.** held on April 1st, members of the Association were given every facility to appoint a new Council and to discuss any important business; and although the meeting included men who undoubtedly share many of our correspondents' views, they never troubled to create a live and profitable discussion. Few members care at all to exercise their votes. The Council of the Association are entitled to follow what they consider to be the best policy in the interests of their members and the Craft generally. Those who differ should have the courage to express their opinion and endeavour to convince those who hold different views of their mistakes. The formation of a Beekeeping Society here antagonistic to the **B.B.K.A.** will hardly be compatible with the spirit of co-operation which our friend is pleading for. **The Apis Club** will fill most if not all his suggestions, if the Craft will continue with vigour its development, and we expect it not to oppose any existing organisation, but rather to receive a whole-hearted support from all.—Ed.)

DIFFERENTIATING RACES OF BEES.

To the Editor of The Bee World.

DEAR SIR,—The following extracts from "**L'Ape e la sua Coltivazione**" may be of interest to fellow members of **The Apis Club.** Nowhere have I seen the distinction so clearly drawn between the ordinary "Black" and the bee which has come to be known here as the Dutch Bee.

APIS. (Linn.)

Group 1. Have the metatarsus provided with 13 series of hairs, comprises, **Apis dorsata** (Fabr.) with two varieties, **Apis Bicolor** (Klug.) and **Apis zonata** (Smith).

Group 2. Have 9 series of hairs on the metatarsus and includes the following:—

Apis indica (Fabr.) identical with the German Bee.

Apis Florea (Fabr.) about half the size of the former, cultivated with success by the natives of India.

Apis Mellifica (Linn.) The only one which is of any interest to Apiarists. This species is sub-divided into varieties or races, which are distinguished from each other by natural habitat, size and colouring, and by temperament.

(a) **The Black Bee,** also called the German Bee, or dark colour. black-brown, grey-brown, is not at all prone to swarming; it winters well. It is, however, easily irritated, but is a good forager. It is rather troublesome under management, the bees getting excited, running over the combs taken out for examination, even to the point of collecting in little bunches which drop to the ground.

(b) **Die Heidebiene** (the heath bee) which is a variety of the common black bee. It is only distinguishable from the ordinary black bee in its incoercible proclivity to swarm, acquired throughout the centuries from the special treatment it received from the Nomad Beekeepers of Luneburg and of Hanover. It is only in these parts that this bee is cultivated and it could not well be replaced by a better bee for the peculiar conditions in these districts where the only honey flow of any importance is that from heather in autumn.

(c) **The Carniolan Bee** of a greyish colour, lighter than the colouring of the ordinary bee. It combines an extraordinary docility with great foraging activities. It is a variety indigenous to Carnia, Carnizia, and Stiria in Austria. It winters well under extreme cold, but like the Bee of Luneburg, it is a great swarmer and is of use only in districts with a heavy autumn flow. It is greatly sought after in Germany and Switzerland.

(d) **The Italian Bee** (Apis ligustica, Spin.) distinguishes itself from the other varieties in its beautiful colouring, and is indigenous to the greater part of Italy, the Canton of Ticino of Switzerland and the Trentino. In the South of Italy, on the southern side of the Apennines, and on the Italian Islands, the colouring is not so bright and inclines to brown. All Italian bees however are the same in their docility, their industry, their keen sense of smell, their resistance to disease, and the indomitable courage with which they defend their hives against aggressors. Indigenous, as we said to Italy, it is now cosmopolitan. The Americans rightly prefer it to any other for its excellent qualities and because it resists the extremes of heat and cold; and on both sides of the Atlantic it is sought after for improving the indigenous race by crossing.

(e) **The Cyprian Bee** is very similar to the Italian Bee, but its colouring is brighter. Its characteristics are bright golden colouring tending to redness of the first three dorsal segments, of the metatarsus and of the ventral segments, and the almost whiteness of its pubescence, giving it a very beautiful appearance. It was introduced into Germany and also into Italy; its cultivation has however been abandoned on account of its unmanageability.

(f) **The Egyptian Bee** (Apis Fasciata). Beautiful in appearance like the Cyprian, it is considerably smaller than the German and Italian Bees. Egypt, Arabia and Syria are its homeland, but it is to be found with very slight variations along the coast of Africa and in Asia.

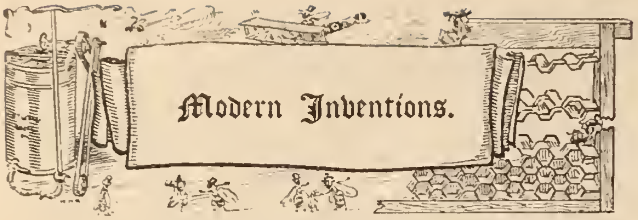
(g) **The Caucasian Bee** is similar in colouring to the Italian Bee. It is very docile, is however intolerant of strange bees. It is a great swarmer and constructs a large number of queen cells.

That is De Rauschenfels and Asprea's description, which tallies with that of most other authorities, except that, as far as my knowledge goes, (a) and (b) have not previously been differentiated and described. It is obvious, I think, that (b) the Heidebiene is what we call the Dutch Bee, imported into Holland because it lends itself so well to propagation for sale. As Asprea says, it is invaluable for heather districts by which time the numerous casts with their parenstocks all provided with young queens will be just in the right condit tion when the heather blooms. It must however be valueless where a fall flow does not succeed the ordinary summer flow, unless of course its swarming can be dominated.

Yours faithfully,

Riccartsbar Avenue,
Paisley, Scotland.

H. M. STICH.



Modern Inventions.

The Expeditious Hive.[*]

By T. DUNCAN NEWBIGGING.

(1) INTRODUCTION.

It is necessary in the first place to point out that this hive not simply the result of a sudden impulse associated with the possession of " some brains and a buzz saw," nor is it the outcome of that clear light which shines in the mind of every amateur, making obvious to him all the errors of the ancients, and how such errors should have been avoided.

It has been evolved in the successful working for many years of a large apiary and as the result of much thought and many experiments along the lines **as to what hive best suits the conditions under which beekeepers work in Scotland generally**, and in this district (Upper Lanarkshire in particular). As these conditions necessitate " moving the bees," the hive will be found to be the most suitable for all modern beekeepers who recognise that " moving " i.e., " transport " is essential if beekeeping is to be a success.

(2) CONSTRUCTION.

The hive is graceful in design and attractive in appearance. It is **singled-walled**, is built on the **telescopic** principle, and has a **flat roof.** These characteristics make it light, easily picked up, handled, or carried about, even to a distant part of the apiary, a good grip for this being afforded, fore and aft, by the overhanging body-box ends. The " telescoping " provides double walls whenever such are considered necessary, and does away with those rain-trap, dust-gathering excresences which have been called " unscientific and unpractical outer plinths."

The lines of the various parts fall into definite perpendiculars, which, with the flat roof make the hive a " cube." The value of this will be apparent when we come to consider " transport of hives," since each hive becomes secure simply by being placed against its neighbours, as the **roof-pins** of one hive fit into the **pin holes in the bottom runners** of another, the hives may be piled on top of each other with perfect security during transit.

It is furnished, as an integral part of the hive, with a **bottom feeder** of exceptional capacity and design. This feeder is immediately accessible and quickly cleaned out. Its glass cover permits of inspection "*en passant.*"

Guy ropes are so arranged at the sides of the hive as to permit the whole hive being made secure either on the stances, or for transport, by one swift sweep of the hand, without the use of any single tool or accessory of any kind whatever. While a **record holder** (a valuable accessory) is provided in an immediately accessible (although protected) position.

Deliberate design extends even to the stance (or stand), in so much as here also the mere placing of the hive in position gives absolute security.

A double-walled hive on the same principle has been designed. It is of course heavier, and possesses all the faults which cling to double-walled hives.

(3) ANALYTICAL EXAMINATION.

Taking the various parts of the hive in detail we may see how each is adapted to its purpose.

The Stance.—This is made by taking four pieces of cheap " paling rail " each 18″ long, cutting two of these diagonally so as to have four pointed stobs. Two of these stobs are now nailed to the ends of the two 18″ pieces, one of which lies on its flat, the other on edge. The stobs are nailed on about 1″ down. This 1″ projecting upwards secures the hive laterally. The flat cross piece goes to the front of the hive while the one on edge goes to the back, where, by fitting into the space between the bars of the feeder housing it, secures the hive in all other directions.

Bottom Runners of Floor Board.—These are two bars which run from front to back, being 24″ long by 3″ deep by 1½″ thick. They are grooved along the inner surfaces with a groove ½″ by ½″. This groove is ⅜″ down from the upper surface. Into these grooves are fitted the floor board and flight board. Posteriorly for 5⅛″, the bottom runners are cut out to 1″ in thickness. This forms the **feeder housing.** Two cross pieces, one 17½″ by ½″ by 1¼″ and by 1″ (the other) form the floor of the feeder housing, while the space between these cross pieces forms the " **grip** " for the stance. The anterior cross piece being notched with a ½″ notch, forms the " lock " of the body box during transport. A sheet of perforated zinc extends vertically between the anterior cross spar and the floor board. This forms the **anterior ventilating shutter** during transport. A small check piece 2″ by ½″ by ½″ is nailed vertically in the inside of each bottom runners flush with the anterior edge of the floor board. This checks the ends of the alighting board when it is used as a ventilator during transport. Dowel holes are made on under-surface (see " Roof.")

Flight Board.—The flight board is simplicity itself, consisting solely of two spars 15½″ by ½″ by ½″. On these is nailed a sheet of perforated zinc 14½″ by 3⅛,″ leaving the spars to project ½″ on each side of it. These projections slide in the grooves of the bottom runners. Such an alighting board is **simple,** always **clean** and **dry,** forms **a sure footing** for the bees, (perforations [†] give it a " rough " surface and there is no slope on it) permits of **ventilation** while the bees are shut in on their stance, or when working during very hot weather forms the **upper surface of the swarm catcher** when such is in use, and becomes the **posterior ventilator** during transport.

Floor Board.—The floor board is made of ½″ lining measuring 15¾″ by 15½″ and fixed in the grooves of the bottom runners, which, being ⅜″ higher than the floor board, raise the body box a bee space. A plate ⅜″ thick by 14½″ by 2″ is fixed at the back of the floor board between the bottom runners. From the rear of the floor board a sheet of perforated zinc hangs perpendicularly to the cross spar as already stated. (See " Bottom Runners.")

Feeder.—This is a bottom feeder, placed at the rear of the floor-board, and accessible from the back of the hive, without opening the hive or interfering with the bees or quilting in any way. It measures 14½″ by 5⅛″ by 3″ and sits as stated in the **feeder housing.** between the bottom runners. It has a sloping glass cover over the filling chamber. One can thus see at a glance what its contents are. This filling chamber presents an opening 13⅛″ by 3″. It will be seen therefore with what ease and speed it may be filled, even on a wild wet day such as one often gets when stimulating feed is necessary. The sloping glass cover prevents the entrance of robber bees or rain, while it permits of ready inspection at all times.

Swarm Catcher.—This is constructed on the principle of the " creel," and hooks itself on to the flight board. The term " swarm catcher " is really a misnomer, since it in no way catches swarms. In fact in no way does it interfere with the flight or easy ingress and egress from the hive of workers, drones, or even of a virgin queen. On the other hand a **clipped** queen issuing with a swarm falls into the creel and is trapped there, being unable either to get away or to re-enter the hive. She is however readily observable even hours afterwards when the bees have gone back to the hive. At the same time, she is not permitted to starve as she is never out of contact with her own bees. Close attention even during the swarming season being thus rendered unnecessary.

Body Box.—The body box is single-walled. The formation of the ends gives a good grip for lifting and carrying the hive about. It is therefore light and easily handled. As I use it, it is made to take ten frames and 2 dummies, or 11 frames. It readily slides backwards and forwards over the bottom runners. Backwards, so as to admit the bees to the feeder ; forward, so as to make a ventilated entrance, or, still further, so as to make a double entrance (one back and front of the hive) with a through current of air, in the height of the season. It projects laterally ⅛" over the bottom runners, thus preventing rain or damp from lodging on these. Its **hinged rails** keep the ends of the frames in position, while securing " supers " or a second body box in position.

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[*] This article amounts to something more than the description of a new progressive hive, since it gives a good insight into beekeeping conditions in Scotland which require special management. There are several views put forward by Dr. Newbigging from which many will dissent, e.g., that bees will go to a bottom feeder when they will not go to a top one. We would have liked to comment on such points and stimulate a helpful critical discussion on the subject matter of his article ; unfortunately we are prohibited by limitation of space and time.—Ed.

[†] The use of a perforated zinc flight board is most advantageous. Such a flight board (non-hinged) was presented by "The Insulator Hive," introduced over a year ago. (**The Insulator Hive,** p. 13, February 1919. Literary brochure published by James Lee & Son, Ltd.)—Ed.

Entrance.—This extends the whole way across the front of the body box, and measures when full open 14½" by ⅜". Increased ventilation and entrance space may be secured as above stated, while the entrance may be reduced to any extent or completely closed by the **shutters** which are two simple blocks of wood each measuring 7" × ⅝" × ⅝". When completely closed ventilation may still be provided for by the sliding body box forward over the perforated alighting board. By using the floor board inverted, the whole hive bottom is practically open. This gives, in front, a very extensive 14½" by 3" entrance, and at the back a similar opening 14½" by 3" protected by perforated zinc. We have thus **a most efficient non-swarming chamber.**

Lift.—The lift is of the telescoping, invertible type. It is 11" deep. Its inside check-pieces are made of very light ½" angle iron so as to economise space. Being 11" deep it comes (when inverted) well down over the body box, making a complete double-walled hive, giving an entrance which cannot be blocked by " drift," while at the same time it is shaded from " snow-glare," and when " tiering " or working with two body boxes (dual queen system, queen rearing, etc.,) the lift inverted over the upper body box comes down beyond it, embracing both body boxes and keeping them securely in position.

Roof.—This is a flat roof, which telescopes over the lift. It is 6" deep. Its ventilators are placed at the highest point, thus permitting of the greatest degree of contraction for transport, while assuring the most ready and certain ventilation. It has a projecting canopy in front, which throws rain and snow well over the entrance, makes an extra shade in summer, and makes the roof the same size (from front to back) as the bottom runners, thus completing the " cube," the avantages of which in transit have already been pointed out. A **special clip** under the canopy forms a **record-holder** which is accessible at all times without opening the hive or lifting any part of it, and is always dry and safe. **Two dowel pins** projecting on its upper surface fit into the **dowel holes** in the bottom runners of any other hive placed on top during transit, thus securing each hive by simply laying the one on the top of the other. The roof is made flat for appearance, compactness, ease and rapidity of packing and security when packed. Further, the flat roof is an inestimable boon when working an apiary. With it one has always to hand a level and secure surface on which to lay anything as, e.g., when putting on super-clearers, etc.

Guy Ropes or Stenting Ropes.—These are provided on each side of the hive. By them the hive may be made secure in a moment either on the stance or for and during transit.

(4) SPECIAL ADVANTAGES.

The special conditions which this hive has been designed to meet may be stated as under :—

(a) Long and severe winter.
(b) Cold backward spring.
(c) Very late honey harvest.
(d) The need for some quick and convenient method of feeding.
(e) The need for transport in hives.

A brief consideration of these will make it clear how well this hive meets them.

(a) Long Winter.—In this district (Upper Lanarkshire) winter may be reckoned on as of seven months' duration at least. When I came here, I was told by a gamekeeper that " we had nine months winter and the other three, damn cauld."......So far as the bees are concerned, we may count our winter as from mid-September till mid-April. In 1911, few colonies had more than two frames with brood in the second week of May. Bees had need be well prepared for such a winter ; in fact, many Scottish beemen have come to think that it is better to kill off all stocks at the back and buy in swarms from England in the following June.

(b) Late Honey Harvest.—In heather districts much of the late honey crop is stored in the body box, and while it is wise to secure as much of this as possible, both for its own sake as a saleable article, and because it is bad as a winter store, it is still essential to have all the stores collected and sealed before the weather becomes too cold. My policy is to take away every ounce of honey not in the combs in which there is brood or pollen (and it is a far more serious thing to rob the bees of pollen at this time of the year than to rob them of stores). I take away, as I say, every ounce of heather honey I can, fill up the hive with frames and feed up **solid and rapidly.**

(c) For this **rapid and massive feeding** I have designed my large bottom feeders. Apart from the ease and speed with which they can be filled, the bees are never disturbed nor is the quilting cooled down by the feeding process.

It is important to remember that quilts do not warm up the bees, but that they themselves must be warmed up by the bees, thus every time the quilts are disturbed they are cooled down and must be warmed up again by abstracting heat from the bees. This happens every time a top feeder is filled and is a very serious loss to the bees, especially at this time of year, and when one remembers that feeding is usually done at night.

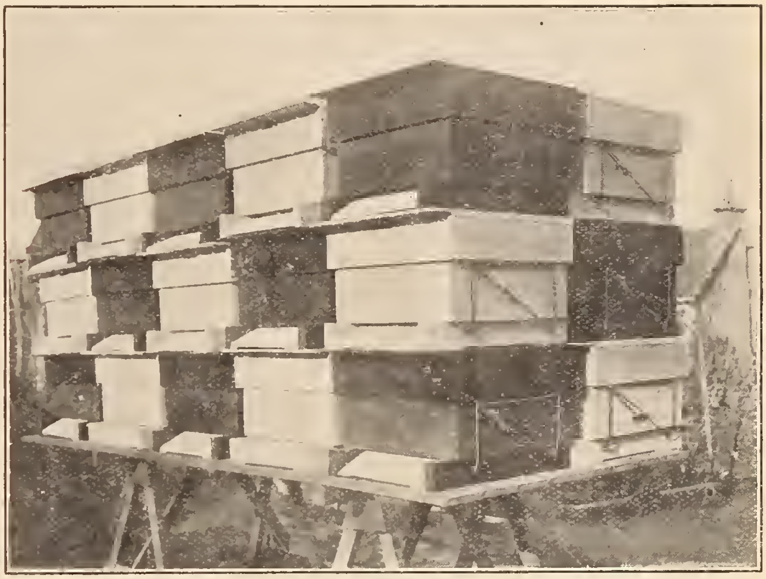

Fig. 70.—Ready for the Heather.

Thirty T.D.N. hives, securely packed and fully ventilated (two ventilators for each hive), accommodated on a garden table measuring 10 ft. × 4 ft.

It is wise that we should not forget this fact ; that packing does not engender heat. It only conserves the heat engendered by the bees, just as blankets on our beds must be warmed up by our bodies, serving then to conserve the heat we ourselves have imparted to them.

Thus with a bottom feeder which can be filled in a few seconds. It is easily accessible, does not involve undoing the top of the hive and the opening out of the packing with a consequent disturbance and loss of heat to the bees, not to speak of the loss of time to the apiarist ; a feeder, moreover, which holds with two or three fills all that any colony can require from October till May, I think we come pretty near the ideal. Over and above this, however, we know that bees will go to a bottom feeder when they will not go to one on the top, and further (and this is not the least advantage) by feeding up at this rate we get, almost to a certainty, nothing but worker comb. We so raise the temperature inside the hive that the stores are properly evaporated and consequently well sealed. This " **good sealing** " more than anything else ensures a dry atmosphere inside the hive throughout the winter.

No beekeeper needs the importance of this pointed out to him. Slow feeding means time, energy and bees lost. It may be said : " it carries on breeding," but this is at best a very doubtful advantage, since the old bees are exhausted in the process and the number of young bees raised at this time of the year cannot be great.

It is well enough known, that, stocks breeding late in the autumn, are late in starting to breed in the spring. With slow feeding the temperature is never sufficiently raised to permit of wax building or of efficient sealing. Inefficient sealing means a moist atmosphere inside the hive all winter: it means also fermentation and consequent dysentery.

With a large bottom feeder readily accessible such as suggested, it is no difficulty to feed a whole apiary almost as quickly as the syrup will run out of a watering can, and within a week's time of having taken off the heather honey, to have everything filled up solid and the stock quiet, till springtime.

Under such conditions "candy" is a luxury. In fact with young queens and autumn preparation such as this, success is certain, labour is reduced to a minimum, and that minimum gone through quickly. The question of body boxes suitable for shallow frames instead of standard brood frames (a Divisable Body Box, one which I have considered very much and used many times), I am convinced that for this as for any heather district the advantage lies with the smaller frame and two or three body boxes, so much heather honey (so valuable to the beekeeper and not at all good for the bees) is stored in the brood combs that either it must be left with the bees or much comb—even if not brood—destroyed to secure it.

With a Divisable Body Box, it would so often happen that whole combs of honey could be taken away and whole frames of brood left that great gain would result; further, this would add to the ease of uniting when advantageous for wintering, and again, many such combs filled out in the building up process in springtime could be removed then, stored away, and given back when preparing for winter.

The greatest value of such combs of stores would not be in the character of the honey but in the amount of pollen they contained. I have already shewn how the hinged bars on the body box and the overlapping of the "lift" would make these body boxes firm and rigid. Such Divisable Body Boxes have a special value in queen rearing and any scheme of early artificial swarming, e.g., on the Alexander principle.

(d) Transportation of Hives and (e) Late Heather Harvest.—These two headings are closely associated. It is their relation, the one to the other, which has made me, more than anything else, work out this hive. In a district such as this it is almost essential to transport the hives twice a year, involving four journeys: to and from the fruit bloom; also to and from their heather quarters. It has long been an established custom in this district to move the bees from their winter quarters to the fruit districts in spring. This for the sake of the spring feed.

I propose to winter my bees in a milder part of the country than this is, transporting them in September after taking away all the heather honey and while they are still light before being fed up. As this feeding can be done so easily with my bottom feeder, I will do it on their winter stances. The combs being light, the bees will travel safely. I am told that by "wintering" in such a place my bees will ruin me on account of the amount of stores they will eat in winter but, if, "a swarm in May is worth a load of hay" how many pounds of sugar will it be worth? This "wintering away" may take the place of spring transport. Transport to and from the heather is a well recognised essential if heather honey is to be obtained at all.

We see then the need for ease in transport. The marvel is that for so many years this transporting of hives has been carried out with such cumbersome, ridge-roofed hives as have been used.

(5) CONCLUSIONS.

I think I have secured a hive which meets all requirements, which principally makes packing simple and transport safe.

For Packing, all one has to do is to go round of an evening, or whenever suitable, lift the body box of the hive and invert the floor board; this leaves a large open space below the frames which forces the bees "inside" when evening comes. The flight board is then turned up and fixed by means of thumb-screws. This gives us our colony packed—and packed quickly and safely, without the use of a single tool, having a 3″ space under the combs and a ventilator front and back—measuring 14½″ by 3″, with a through current of air which cannot be arrested. It is inconceivable that such ventilators could ever be blocked either by dead bees within or by accident, carelessness or malice from without. It will be seen that it takes less time to pack a hive than it takes to tell about it. Again, for packing a number of hives, they fit into one another like so many cubes, each holding its neighbour immovable so compactly that 108 hives may be packed in one railway waggon. The eightcenth part of a penny per mile for each hive! Surely nothing could be better or cheaper than this.

Apart from the very obvious utility of this hive and its special adaptability to all requirements, it is light, convenient and easily handled at all times. It should be capable of being produced at no exorbitant cost, while the lines on which it is built are admitted by critics as very graceful. I know that many who have been accustomed to the old double-walled, cumbersome, ridge-roofed, hive will object to this hive because it has a flat roof and is single-walled. But let such compare the two in actual working and during the busy season: the light convenient flat-roofed hive against the heavy, cumbersome, unmanageable, ridge-roofed hive of old and he will favour the one which is light, easily picked up and handled. With it, all manipulations will be found to be easily and quickly executed (supering, queen rearing, feeding, etc.)—it can be picked up and carried about with ease in a way that means business; while the other...... what a sacrfice in time, in money and in energy such a hive involves!

When it becomes necessary to transport the hives, the advantages are more than ever obvious. The convenient Record Holder is no small advantage.

Here, I think, is a hive which might reasonably be called—"**Expeditious**" or what amounts to the same thing the "**T.D.N.,**" since I would require to give up my hobby if I could not get through the work with expedition.

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The A.Z.A. Queen Cell Incubator.

Although it is to be admitted that the "contact heat" of bees is of no small significance to the incubating queen cells, on account of the essential **humidity**, which is unfortunately little appreciated by those not well acquainted with queen rearing, the water bath method of incubation on artificial lines is primarily based on full appreciation of this vital factor for success.

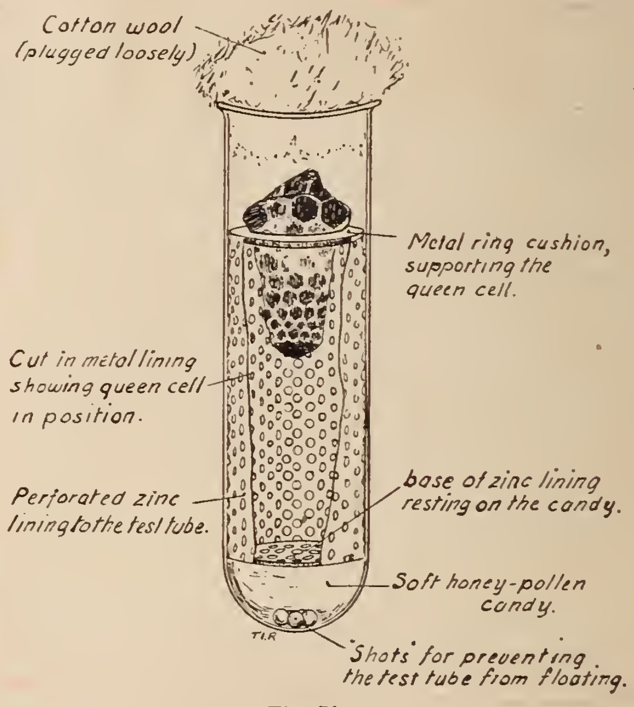
Cotton wool (plugged loosely)
Metal ring cushion, supporting the queen cell.
Cut in metal lining showing queen cell in position.
base of zinc lining resting on the candy.
Perforated zinc lining to the test tube.
Soft honey-pollen candy.
T.L.R.
"Shots" for preventing the test tube from floating.

Fig. 71.

The above illustration (Fig. 71) shows one original and convenient way of incubating a queen cell in a test tube. Special attention should be given to the **loose** plugging of the test tube, also to the provision of nothing but honey pollen candy, since the early feeding of a newly hatching queen on proper diet is of supreme importance for the building up of her constitution. A poor diet, although it might serve to ward off starvation, will never be a tissue builder.

The "Claridge" Queen Introducing and Nucleus Cage.

This cage has been designed to enable beekeepers, expert or novice, to introduce queens with absolute safety and certainty, either for the purpose of requeening a stock or forming nuclei.

Simple and economical in construction, it is nevertheless thoroughly efficient, having been extensively tested in the apiary of the designer, Mr. F. M. Claridge, the well known apiarist of Copford.

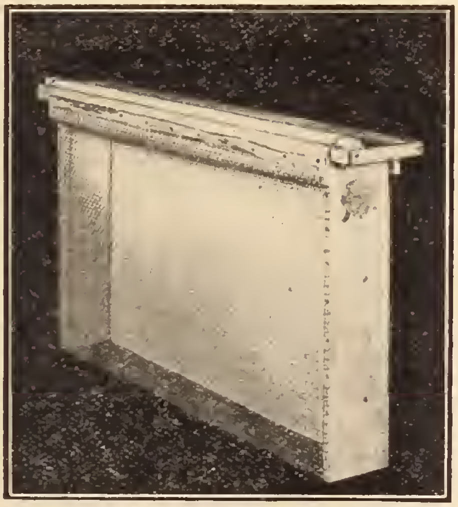

Fig. 72.—Claridge's Queen Introducing and Nucleus Cage.

The cage is a composite structure of wood and wire net-work and is designed in two sizes to hold either one or two Standard brood frames, leaving a bee-space all round the frames inside, and is intended to be hung **above** the brood chamber in another brood-box—hanging across the box (i.e., **at right angles to the usual position** of the frames)—this is necessary as the size will not allow it to be hung **inside** the brood nest, Mr. Claridge preferring this for the purpose of utilising the ascending humid heat of the colony. This is a decided advantage, but on the other hand it creates a hindrance to supering, and makes the cage more advantageous for those who are raising several nuclei at a time, and of no value to those who have no W.B.C. or similar hives.

The Whyte Nucleus Cage, previously introduced by Mr. Richard Whyte, President, Glasgow B.K.A., is, on the other hand, made throughout of wire gauze, permitting by a special bee escape, a free communication on the top of the frame, and it can be accommodated **within** the brood chamber of any hive. Each type of cage, however, has advantages and disadvantages of its own.

In operating the Claridge Cage, for instance the pattern intended to take one frame, a comb selected (from any stock which can spare it) containing **all sealed brood,** as old as can be found, (if the young bees are actually emerging from the cells, so much the better) and having some stores (a pound is ample) of which most should be unsealed ; if not, bruise or scratch some cappings.

This comb is swept clean of bees, not a solitary bee being left on it, and is quickly placed into the cage, the small quilt with which the cage is provided is then securely fastened in place, and the young queen run in by means of the hole in the side provided for the purpose, the tin cover to which is then turned back again.

The cage is then hung across the upper brood-box, which has been prepared in readiness, and if only one cage is being used (as many as five can be used over a strong colony) it is advisable to lift two more combs with the adhering bees—it does not matter if brood is in these combs or not—and place one each alongside the cage, taking care to leave the old queen down below, both body-boxes being filled up with combs or frames fitted with full sheets, and the whole packed down warmly with quilts.

At the expiration of a week, or less if good choice of the brood comb has been made, the cage may be examined, and if there are plenty of young bees emerged inside the cage, the next stage can be carried out. This will depend upon whether it is desired to start a fresh stock, or re-queen the old one. In the first case it is merely necessary to transfer the comb with the new queen and her young attendants to a fresh hive, giving them another comb of **rapidly hatching** brood and one of stores, and pack them up warmly. No loss can occur through desertion, as they know no other home. This process can be continually repeated.

If it is intended to re-queen the old stock, the process differs from the above only in its final stages. The new queen is introduced, and the comb transferred to a spare hive which is to be stood as close alongside the old one as possible, both entrances facing the same way, extra combs of **mature** brood being given as fast as the nucleus can accommodate them, until both stocks are about equal, or the new one has eight combs covered with bees. Now fill up both bodies with frames and unite the two stocks by placing a sheet of brown paper over the top of the new one, punching numerous small holes in it with a pencil point and stand the old stock bodily on top of the other, having first disposed of the old queen. They can often have supers given them at the same time that they are united.

The outstanding features of this method (which puts into another convenient form, those associated with the **Brood-Hatching Chamber**) are the absolute certainty of safe acceptance of the new queen, and the fact that the old queen is kept on laying till the last minute. The great advantage of this last item cannot be over-estimated, and may be better appreciated when it is pointed out that in ordinary methods of introduction there is a cessation of egg-laying for several days, whereas in the above described method there are **two** queens laying for some while, and no stoppage at all. This makes a difference of several thousand bees later on.

Meadows' Queen-Rearing Outfit.

Much credit is due to Mr. W. P. Meadows, the veteran beekeeper, of Syston, Leicester, for popularising queen rearing in this country on scientific lines. Whatever may be said against unnatural methods of queen rearing, the fact remains that, in capable hands and with good outfits, excellent work in queen production can be accomplished. Mr. Meadows has made a life-long speciality of this branch of apiculture and has continuously reviewed the various queen-rearing appliances employed in different countries and both adopted as well as improved on what he considered to be the best of them.

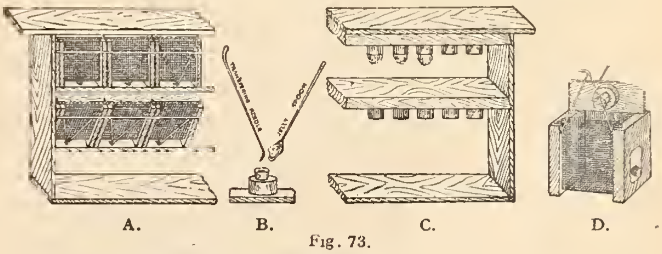

Fig. 73.

A.—Half Frame with Nursery Cages.
B.—Transferring needle and jelly spoon.
C.—The other half with cell cups.
D.—Nursery cage showing the wires turned up for suspending and the cover stood sideways.

In his latest outfit, Mr. Meadows deals away with the passing of the cell "cups" through special holes. These are pegged on the frame to start and on the cover of the nursery cage to finish, a slight twist without any shake will detach for transferring.

The nursery cage is fitted with suspending wires and may be hung single between any frames in any colony or placed in a frame in quantity as shown in fig. 73. To the best of our knowledge, no other plan offers a better means of utilising all queen cells reared either artificially or under the natural swarming impulse. Started cells may be cut off the frames with a bit of comb and pegged in the cages as above mentioned. A nucleus may be formed and the cage with the cell in, hung between the frames, allowing the young queen to hatch and be introduced through the side hole (provided with a swinging mica shutter) at will.

For anyone who is timid at catching a queen on a comb, this nursery cage is convenient. Just remove the cover and place the cage carefully over the queen; in a few seconds she will realise her confinement and will climb up the inside of the cage, a piece of cardboard under and she is safe.

We congratulate Mr. Meadows, who is now over 70 years old, on his ever-progressive and original achievements.

HISTORY OF THE IRISH BEEKEEPERS' ASSOCIATION.—III.

By M. H. READ, M.A.

It would appear that in eleven years only two errors in judgment were made by the Association —its recognition of two standard frames at its first meeting and the attempt to alter the length of the top bar to 16 inches.

At Committee Meeting of 6th June 1893, a letter was read from the Land Commission, Agricultural Department, offering to recommend the congested Districts Board to make a grant of £60 for the promotion of beekeeping in the districts under their charge. The Committee, recognizing the importance of this proposal, put forward Mr. Turlough B. O'Bryen, for the post of Instructor, and sent him on a prospecting tour of Counties Mayo and Galway. The report which he made showed that the prospects were encouraging and the scheme was proceeded with.

Thus began the real life work of one whose energy, tact and contagious zeal accomplished more for beekeeping in Ireland than can be attributed to any other man.

A sub-committee was appointed to draw up specifications of a standard hive for use in the congested Districts. Their names were J. K. Millner, T. B. O'Bryen, J. M. Gillies, M. H. Read and H. Chenevix. The hive specified by them has ever since been known under the title "C.D.B." as the standard Irish hive. Not recognising, however, how well they were building, they modestly recommended that it should be the hive for the following season only. Mr. J. A. Abbott contracted to supply 30 outfits for the season at £1 each—smokers 2/6 extra. The outfit consisted of hive with 2 supers, quilt feeder veil, $1\frac{1}{2}$ lbs. brood and $\frac{1}{4}$ lb. super foundation and carbolic cloth. The supers were to be fitted with 27 $1\frac{1}{2}''$ sections without dividers.

The work met with most encouraging success from the first and developed rapidly, calling for larger and larger grants every year, till in 1895 a sub-committee drew up a scheme for the C.D. Board to expend £200 on apiculture, and arranged contracts with Messrs. Abbott and Edmondson Bros., for supplying the outfits for the Board.

From this on the work was carried out directly by the Board; though Mr. O'Bryen did not yet become their full time officer.

In 1894, he was recommended to the Commissioners of National Education as competent to give instruction to school teachers, and to examine their pupils for result fees. And Mr. Anderson, Sec. of I.A.O.S., having applied for services of an instructor in beekeeping for Dairy Societies, he was recommended for this work also.

In the autumn of this year (1894), John Edmondson died. He had taken great interest in the work of the Association and had acted as its Hon. Treasurer since 1886. The office has been combined with that of Hon. Sec. ever since.

Early in 1985 the Association, in response to a letter from Mr. Thos. Cowan, joined the B.B.K.A. in an effort to have foul brood included in the provisions of the Contagious Diseases of Animals Act. Evidence of the need of this measure was collected; and Captain Millner was appointed to represent the I.B.A. on a deputation, which was to lay the case before Mr. Herbert Gardner, President of the Board of Agriculture. A change of Government occurred immediately after; and the effort was abortive. A useful link between members and headquarters was a leaflet issued quarterly by Mr. Chenevix, called "Notes and Hints." Its name indicates its scope: and it was so much appreciated, that in this year 1895, it was issued six times a year; and it continued till the Irish Bee Journal was born in May 1901.

Members were given the further privilege of receiving the Beekeepers' Record at 1/- yearly—half the cost to the Association; and 63 members took advantage of the privilege the first year.

In 1896, an Instructive Apiary was established at the Model Farm, Glasnevin. The Commissioners of National Education assigned a rood of ground to the Association for the purpose, and bore the expense of bees, hives and appliances; and the Royal Dublin Society made a grant of £50 to the Association towards cost of first year's work. Mr. O'Bryen was appointed Manager and Lecturer and Mr. E. B. Drought as Assistant, to carry on the work in the absence of Mr. O'Bryen.

Here many teachers in training, and a few outsiders, received instruction in beekeeping: and a special certificate was issued by the Association to those who qualified in the subject. Thirty-two passed the tests and received the certificate the first year. This qualified them to earn the capitation grant of 5/- per pupil, taught beekeeping by them. Some of the pupils resident at the Farm were also taught, and passed their examination in beekeeping.

The Instructive Apiary was maintained by the Department of Agriculture and Technical Instruction where they took over the Farm: and instruction was given there to pupils in training for posts under County Councils, the writer, among others, having often lectured and demonstrated there.

The courses of lectures were continued by the Association through Mr. Drought as Manager and Lecturer up to June 1899, when they were discontinued for want of funds.

The organization of beekeeping in the congested Districts included the forming of local associations. The first, formed in 1897, was the Lough Rynn B.A., having the Rev. J. G. Digges as President and Mr. H. Reid as Secretary. The success attained almost at once by this Association acted as a spur to the formation of others; and the Report for 1899 records ten affiliated to the I.B.A. A letter from Mr. Digges describing its methods and success was printed as a leaflet, and distributed wherever there was a prospect of forming an Association.

The Congested Districts Board, after consulting I.B.A., established a depôt in Dublin for dealing with the honey produced under its auspices. Here it was put up in marketable form, and the bulk of it exported to England—Messrs. Lipton being for years the chief buyer. In this year a label was issued to members, for use on jars of honey, guaranteeing the purity of contents and was largely availed of for a number of years.

The joint effort with the B.B.K.A. to obtain legislative powers for dealing with foul brood having failed, the I.B.A. approached the Congested Districts Board in October 1898, in hopes that, being a branch of the Government, they would have sufficient influence to carry through a measure so essential to the success of part of their work. No practical result followed.

By this time beekeeping had developed so far in Ireland that considerable difficulty was experienced in marketing all the honey offered at reasonable prices, and the selling depot had been changed four times.

Accordingly, Mr. Chenevix had become an advocate of the policy of curtailing the propaganda of the Association, and directing its energies to making beekeeping more profitable to those already in it., Failing to carry the committee with him, he had intimated his desire to be relieved of his office. The writer had been appointed joint Hon. Sec. since 1893, and on the first day of the new century he undertook the sole Hon. Secretaryship combined with Hon. Treasurer. This year was rendered memorable by the visit of the aged Queen Victoria to the country of the gallant Irish soldiers who had laid down their lives in South Africa in support of Her throne. And the Association seized the opportunity of making a presentation to Her of a 1 doz. case of honey, contributed for the purpose from each of the four Provinces.

The Report for the year commences with the following sentence—"When our late Queen made known Her gracious intention to come among us, your Committee, at their first meeting, passed a resolution of welcome to Her in the name of the Association, and made a presentation of Irish Honey; of which an account was sent to members in 'Notes and Hints.' And now, in common with the Empire and the world, we mourn Her loss."

The opening year of the century was a very special milestone in the history of Irish beekeeping.

The Department of Agriculture and Technical Instruction having been set up, the Association entered into negotiations with a view to having this industry fostered by it, and received much sympathetic encouragement. A scheme was prepared and presented to the Department, which differed little in principle from that now worked by the D.A.T.I.

The project of issuing an Irish Bee Journal was mooted: and in May of the following year it was launched with much trembling, under the charge of the Rev. J. G. Digges as Editor; who threw such energy into his task that its success was rapidly assured.

Among those who had recognised the commercial possibilities of beekeeping while it still was without state aid we may mention the Rev. Canon Proctor of Tullawelan, Clonwel, one of the founders of the Association; who derived quite a substantial addition to his income from his forty stocks, proving that Clonwel still deserves its name. Also Mr. Thos. Kirwan, of Tuam, Sessions Clerk, who worked successfully with sixty stocks, and was, I believe, the originator of the "Dublin section" one grooved down the two sides, and having a saw cut in the bottom through which foundation could expand without buckling over. But the one who for years held the record as the largest beekeeper in Ireland, and the most uniformly successful; was John Doyle, of Adamstown, Wexford. He commenced as partner with his brother in a small farm, and, having been placed in communication by Mr. Chenevix with a large firm of English Grocers, retained its custom all along by fair dealing on both sides. He built up an apiary of from one hundred to one hundred and fifty stocks, and to such good purpose that out of its profits he was able to purchase two farms. When an Instructor in Beekeeping was required for County Wexford his skill and success marked him out for the post. Sudden death put an end to his activities.

One of our most successful lady beekeepers has been Miss E. E. Rutherfoorde, of Carlingford, the only member remaining of those who joined the Association in its birth year, and a Vice President since 1888.

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BRITISH BEEKEEPING SHOWS IN THE EIGHTIES.

The enjoyable literary correspondence which the Editor of THE BEE WORLD receives from Mr. Meadows has tempted him repeatedly to ask the Beemaster of Syston to permit the publication of some historical extracts from his letters. His diffidence unfortunately stood in the way, and although at last he permitted us to publish a few notes, he is most reluctant on references to his personal achievements. We certainly need not dwell much on his well-known accomplishments. Mr. Meadows in his 35 years of experience in exhibiting, commencing with the 1884 Royal Agricultural Show at Shrewsbury, where he took 2 prizes, one for collection and the other for bees in an observatory hive, presents an admirable record. With about three exceptions he has been at the Royal Show every year since and has their Prize Cards for each year. What will the young generation of beekeepers who have no enthusiasm for the Shows say?

Mr. Meadows writes: "About 1884 I commenced to attend three shows a year: the Royal, the Lincolnshire and the Shewsbury Great Floral Fete. I took the lectures at the latter several years. The Secretary at the Royal Show at that time was John Huckle, a small deformed man but keen as mustard on seeing everything scheduled to the letter. Accompanying him was his man, Frederick Bates. "Fred" had often a trying time. He had to assist with the staging and clean up in addition to running about after Johnny, who used to consider a loose straw on the floor at opening time an offence! We had to be ready at judging time to the minute.

Another notable figure was "Robert"—a fine stout Metropolitan policeman, who had charge of the Beekeeping Department at the Royal Show for years. John's orders were carried out by those two assistants, and there was no exception to his rule that we had all to be cleared off at judging time and not allowed on the premises again till the judges cleared out. You would often see several of us viewing the promised land from a distance......

At the Lincolnshire Shows the Secretary was Mr. Godson. Like Mr. Huckle he was small in statue, and strange to say he was equally particular. He would have everything carried out to the printed instructions, but he was always gentlemanly with his orders and in his manners. We all liked him and tried to do our best to make the Show a success.

W. P. MEADOWS, Esq.

At the Shrewsbury we had a Lady Secretary, Miss M. E. Eyton. Like the other gentlemen she was regularly strict, but in this case we felt it our duty to obey the lady.

I think all who have shown and taken part in these exhibitions have pleasing remembrances.

Those exhibiting hives and appliances were Messrs. Abbott Bros., S. J. Baldwin, T. B. Blow, John Howard, George Neighbour & Son and myself, the honours generally got divided, all coming in for a share, the premier place varying.

The principal Honey Exhibitors were Messrs. R. Brown, Pearman, Tom Sells, A. Weatherhagg, W. Wood and many others who showed excellent honies. The trophies were a real work of art and attracted hundreds of spectators.

The Judges were Mr. Cowan, our 'Bee King' (long may he live), the late Mr. W. B. Carr, the late Mr. John M. Hooker, Mr. Jonas, Mr. Cribb, Mr. Pugh and others—all good sound men who knew what they were doing and did it. My word, it was a task! There was no end of time in examining the numerous and well-filled classes for honey taking.

I do not think future Shows will have the variety of the past, particularly in hives. Beekeeping to-day means standardisation. 'Isle of Wight Disease' has compelled people to put themselves in form. The future successful apiarist will have personally to manage his apiary and not as in the past, leave the work to be done by neighbours or the experts of the County Associations."

THE MODIFIED DADANT HIVE.

Commenting on Mr. Manley's plea for a large hive, **The American Bee Journal** for December, 1919, remarks: "Right, Brother Manley, we have talked ourselves hoarse explaining this. But even your 16″ × 10″ combs are not large enough, and you would say so if you ever tried larger ones on a sufficient scale. That was our experience and many are getting awakened to that effect."

In **Gleanings** for September, 1919, Mr. E. R. Root endorses the plea for large hives by the following testimony: "After interviewing Miss Crowder, we hunted up her father, J. F. Crowder, of Zimmerman & Crowder, of Pasadena, and the apiry in the background where this honey was produced. Yes, indeed, there was a very pretty apiary made of three and four storey colonies, about evenly divided between ten-frame and twelve-frame colonies. Dare I tell it? And would you believe it? The twelve-framers hardly swarm at all, while the ten-framers swarm—well, just as all ten frames do, right in the same yard, with the same honey flow and the same management. Both Zimmerman and Crowder testified to the comparative freedom of the big hives from swarming. It is the same old, old story that the Dadants, Holtermann and others have told us for years." This testimony was quoted in the **Am. B.J.** with the following comment appended: "Yes, and we would wager that the wider hives yield just as many supers full, though 20 per cent. wider than the others, even if the others did not swarm. That is the old story, too, with us."

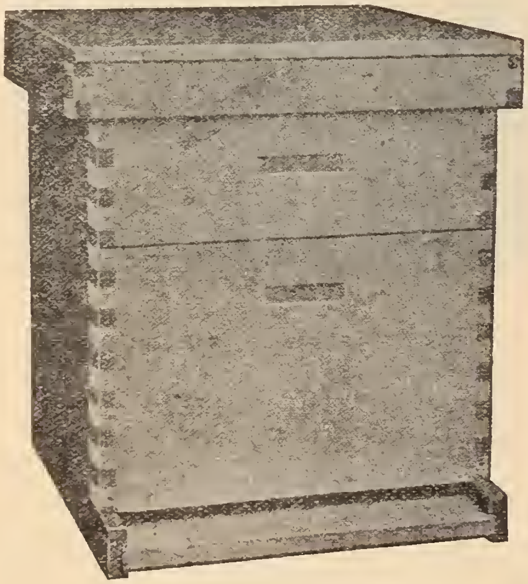

Fig. 74

The Modified Dadant Hive.

In view of the increasing popularity of large hives in almost every country where modern beekeeping is practised, we make no apology for giving a full review of **The Modified Dadant Hive,** which represents the latest evolution of the pioneers of the Large Hive.

☞ Messrs. Dadant & Sons, of Hamilton, Illinois, U.S.A., write: For fifty years, the Dadants have been using and preaching the use of beehives of larger capacity than the standard Langstroth. † Our apiaries, which have numbered from 300 to 730 colonies, have always done best when in large sized hives. The Dadant hive such as we have been using has met our needs satisfactorily, but has been too expensive in construction to meet with general favour among beekeepers.

Therefore, on account of the tremendous demand for something larger than the 10-frame Langstroth hive such as is furnished by nearly all manufacturers, we are placing on the market the Modified Dadant Hive, which has a brood chamber equal to our Old Style Dadant hive and is 40 per cent. larger than the 10-frame Langstroth.

There is no doubt in the minds of most extensive beekeepers or of students of the habits of the honeybee, that a large brood chamber will produce a larger force of bees for the honey crop.

The Modified Dadant Hive will meet practically all the requirements of the extracted honey producer, and we believe will meet with favour with nearly everyone who is in the business for profit or pleasure.

Some of the **advantages** of the Modified Dadant Hive are as follows: (1) deep frames (2⅛″ deeper than the regular Langstroth); (2) a large brood nest (40% larger than regular Langstroth); (3) a large reserve of honey (just where you want it above the brood); (4) a compact winter nest (all in one storey); (5) reduced swarming (your prolific queens are satisfied); (6) wide spacing of frames (more room for storage of honey above cluster, more breathing space and clustering room); (7) adaptability to use of already available Langstroth equipment (don't throw away your old equipment).

The Modified Dadant Hive is regularly equipped with eleven Hoffman style frames which are spaced 1½ inches from centre to centre.

These frames are the same length as the regular Langstroth frames, but are of the Quinby or Dadant depth. These frames are specially pierced for wire to prevent sagging with two wires very close to the top bar. The eleven frames contained in one body have the same capacity as fourteen Langstroth frames, so a hive of this size is really equal to a 14-frame Langstroth.

The Body of the hive is dove-tailed, similar to the standard Langstroth hive, and measures 16⅞ inches wide and $18\frac{5}{16}$ inches long inside.

The Bottom Board. The hive is equipped with a reversible bottom board similar to those furnished with the dove-tailed hives to-day. The bottom is made of cypress lumber and of thoroughly solid construction.

The Cover is metal roof type (like the standard American cover) and provided with an inner cover. The inside of the cover is made so that it will also fit over a regular 10-frame hive body and cover it completely.

The Super is the same depth as the original Dadant supers, 6⅝ inches. This is considerably deeper than the standard 5⅜ inch extracting supers. The super contains 11 Hoffman frames with thick top bars and V wedge for foundation. A less number of frames may be used in the super if desired."

Many excellent hives are spoilt by manufacturers who compulsorily do not take care over the workmanship. The offenders generally belong to the class of big manufacturers who are constantly inundated with orders and are encouraged to do so by their silent customers. The only solution for satisfactory production on a large scale seems to be in revolutionising present methods and machinery. Leading as their international position is and great as their production is known to be, the Dadants have improved a hive which already had in one form or the other a world wide reputation, and yet have not been forced to lower a standard of workmanship which is certainly unsurpassed.

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THE "CLARIDGE" BROOD-BOX CONVERTING RIMS.

These are shallow rims, designed to convert the British Standard brood-boxes into boxes of such size as to take the 16″ × 10″ or the 14″ × 12″ frames. The present novelty, however, belongs to the former, since the latter frame was jointly suggested with such a converting rim.

A rim is simply stood on top of the Standard brood-box, which in the case of the conversion to 16″ × 10″ frames, must be of **not less** than eleven-frame capacity, a dummy-board being used to bring the width to 16½ inches; in the case of the 14″ × 10″ frames, no preparation is necessary—the longer (16″ × 10″) frames will now hang at right angles to the position occupied by the Standards.

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† The Langstroth is considered the Standard frame in America and in many other countries. If there is a hive frame in existence which may be comparatively looked upon as the International Standard Frame, it is the Langstroth (17⅝″ × 9⅛″). Whether it will ever achieve a great popularity remains to be seen.—Ed.

The great saving in expense of new hive-bodies is obvious to those who wish to test the larger frames, now being so widely advocated.

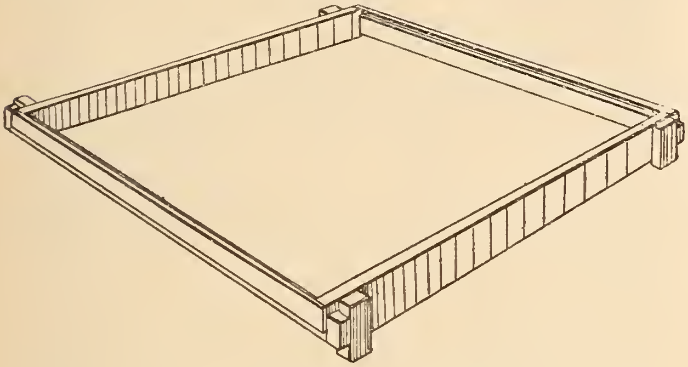

Fig. 75.—Claridge's Converting Rim, for the 16″ × 10″ frame.

Pointed attention is drawn to the fact that the 16″ × 10″ size can only be used on Standard boxes, which are made to take eleven or more Standard frames; this size will not fit on a Standard 10-frame hive; but the 14″ × 12″ size can be used on any Standard hive.

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THE MEADOWS' CLEARING AND WINTERING BOARD.

We gave an appreciative review of this excellent appliance in the September number of THE BEE WORLD (p. 90). Mr. Meadows, with his revolutionary mind, is not satisfied with his achievement. He is now a complete victim to the principle of "detachability," which means much to our mind in creating hygienic and serviceable appliances. His new board is not only made of removable parts, but allows greater ventilation within the hive.

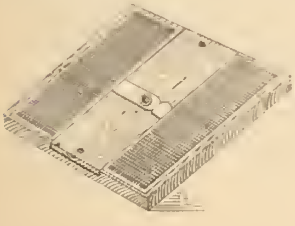

Fig. 76.

The Original Meadows' Clearing and Wintering Board.

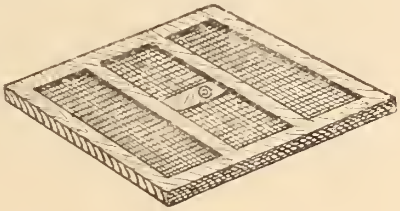

Fig. 77.

The New Meadows' Clearing and Wintering Board.

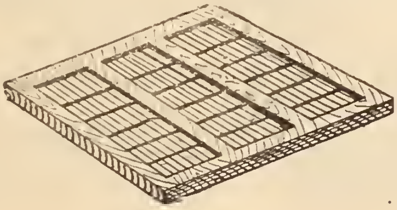

Fig. 78.

The new appliance completely turned into a Queen Excluder.

For those who prefer a wide queen excluder this board can be readily transformed into one. Mr. Meadows appears to be much in favour of the **"Whyte" Queen Excluder.** Such a valuable and simple economical appliance which saves time, money and labour in beekeeping management cannot be too strongly recommended.

THE R.B.M. HIVE.

"The R.B.M. Hive" is Mr. Meadows' synonym for the "Manley" Hive which is being manufactured also by Messrs. Steele & Brodie, the well-known Scottish makers of bee supplies (see THE BEE WORLD, December, 1919, page 151). Both manufacturers are rivals in highly standardised production—a compliment which would never appear in this magazine if not fully merited. From the information supplied to us through the courtesy of Mr. Manley and from an original examination, we have pleasure in giving the following description and Mr. Meadows' views on which he bases his championship of this particular hive. We do not propose to criticise it separately, since our previous editorial notes on the subject of hives in general provide sufficient critical data.

Mr Meadows writes: "The R.B.M. Hive is introduced as an effectual means of dealing with the new races of bees, which have been introduced on a large scale from abroad to replace the native British bees practically wiped out by I.W.D.

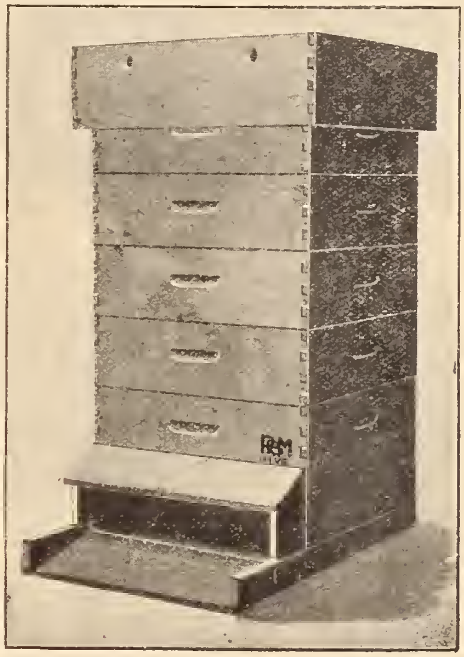

Fig. 79.

These bees are big breeders and swarmers, and require more room, consequently a larger brood body with frames 16″ × 10″ is introduced instead of the British standard frame.

This gives a larger breeding space, so that much larger colonies can be raised in time for the Honey Flow. The Hive is entirely of ⅞-inch thick seasoned timber, the body walls are rabbeted and fitted with metal runners on which the ends of the frames rest. A special important feature is that all the corners are lock-jointed and rabbeted, as shown in Fig. 80. They are therefore square, waterproof, accurate, and easily put together.

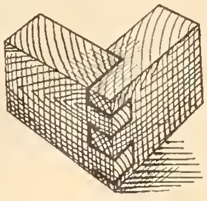

Fig. 80.

The Roof: is a square rim deep enough to telescope over the eke, and well covers the joint on the uppermost body. It is covered with a sheet of "asbestos concrete" grooved in the sides, nailed on front and back, and with the joints cemented.

The Eke: is three inches deep for packing only.

The Section Rack: This holds 24 Sections hung in frames on metal runners.

The Shallow Body: Has 9 frames 16″ × 5″ fitted with a new pattern metal end which fits up to the frame side, giving a grip for the finger and thumb when lifting in or out.

The Brood Body : Has frames 16″ × 10″ hung on metal runners, they have double spacers (American pattern) which space the frames at the top and part of the way down so they hang perfectly parallel with each other.

The Floor or Stand : Is reversible, giving either ⅜ or ⅞-in. spaces under the frames, provision is made for entrances back and front, both of which can be opened or closed instantly and without trouble.

The Flight Board : Is detachable from the stand ; and when off, all the bodies are parallel from top to bottom.

A Porch : Is provided and can be instantly fixed. Many consider this unnecessary, so it can be had or not as desired.

Legs : Are provided, framed together. Nine inches high."

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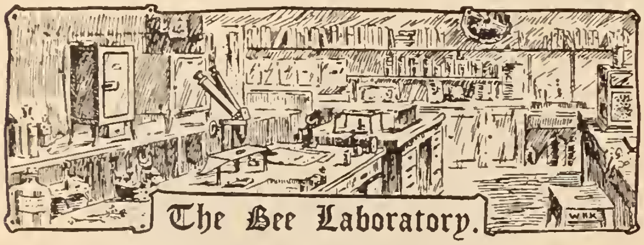
The Bee Laboratory.

NECTAR YEASTS.

By ANNIE D. BETTS, B.Sc.

From time to time accounts appear in the Press of cases where large numbers of bees have been found dead under limes and other nectariferous trees. This is generally attributed to an epidemic of microsporidiosis or some similar disease. While not denying that such cases may be due to disease, I should like to point out another very probable cause ; namely, intoxication owing to the nectar having fermented. It is a fact, which does not appear to be widely known, that the nectar of some flowers is frequently infected with one or more species of yeast, sometimes to such an extent that it is visibly fermented ; this is apparently not harmful to the plant, but its effect upon bees collecting it would probably be injurious.

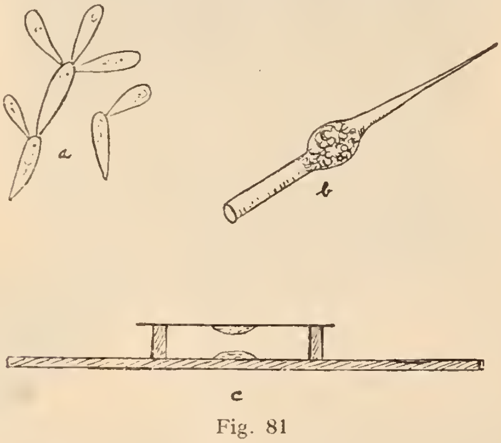

Fig. 81

The nectar yeasts have been very little studied hitherto.* As far as is known, they occur mostly in flowers visited by humble bees ; but as many of these are also frequented by the hive bee, the subject is of some interest to beekeepers, and may well repay study, as the effect of such organisms on both the health of the bees and the composition of the nectar may turn out to be of practical importance.

If, any time after the middle of May, some open flowers of the White Dead-nettle (**Lamium album**) be examined, in the nectar of one or more of them (that is, at the bottom of the corolla-tube) there will almost certainly be found some most peculiar-looking cells (Fig. 81, a). This is the commonest form of nectar yeast. It is spread from flower to flower by bumble bees ; but does not apparently (as I at one time suspected to be the case) pass the winter in the digestive system of the queen bumble bee. Its life history therefore requires investigation. As far as is known, no work has been done on its pathogenicity (or otherwise) for hive bees, nor on its capacity for fermenting honey or pollen in the combs. In this connection it is of interest to note that Root suggested (**ABC and XYZ of Bee Culture,** 1910, p. 313) that the inversion of nectar is due to the action of micro-organisms ; if this is even partially the case, the importance of a study of the nectar yeasts becomes obvious. The species under discussion is however in any case probably not concerned in this process (assuming, which is doubtful, that Root's idea is correct), for it appears to have the power of fermenting **both** cane sugar and honey, in weak solutions.

Other, more ordinary-looking, kinds of yeast also occur in nectar now and then ; of these, next to nothing is known. It is possible that some of the yeasts which are almost invariably present in the bee hive are of this origin.

To study these organisms, it is desirable to remove the nectar from the flower with as little risk of contact with the petals, etc., as possible. This is done by means of a capillary pipette. This is made from a piece of thin glass tubing, softened in a flame and drawn out to a fine point. The tip is broken off, and the little tube inserted in the nectar, which it sucks up by capillary attraction. The contents can then be ejected on to a glass slip by blowing gently through the wide end. If it is desired to make accurate cultures of the nectar organisms, the pipette should be provided with a bulb filled with cotton wool, so that the process of blowing shall not introduce extraneous organisms into the culture medium (Fig. 81, b).

The growth of these and many other of the larger micro-organisms can be very conveniently watched by making a " drop culture." For this purpose a slip is used, having a glass ring cemented on to it. This slip is sterilised, the edge of the ring dipped in melted vaseline, and a cover-glass with a drop of culture-fluid in its centre is placed (drop downwards) on the greased edge. Another drop of the same fluid can with advantage be placed in the bottom of the cell, to prevent any danger of the culture drying up. (See Fig. 81, c.) In such a culture it is possible to watch the development of a " colony " of yeast from a single cell.

To anyone possessing a microscope magnifying up to 400 or 500 diameters, and a fair amount of patience and leisure, I can heartily recommend the nectar yeasts as a subject of study. As has been said, there is much still to be found out concerning them.

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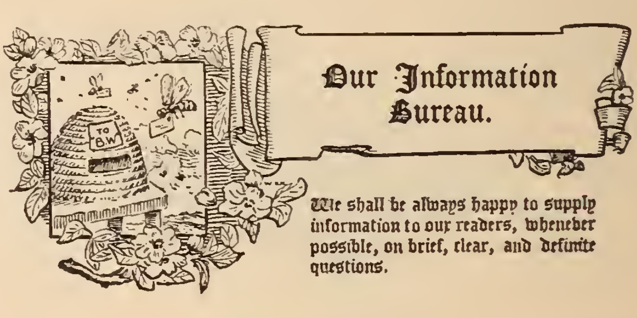

We shall be always happy to supply information to our readers, whenever possible, on brief, clear, and definite questions.

ERRATIC OVI-POSITING. We commend to your notice, Signor Zanini's article in this number of THE BEE WORLD.

A queen as you describe is more worthy of a stronger colony of bees which can provide a larger brood nest. Erratic ovipositing, in our opinion, is not necessary an ailment. A prolific queen given to a weak nucleus will often commit this practice until her desire is satisfied, rarely adapting herself to existing conditions. Ovipositing on stored pollen is a rare thing and most likely accidental. It is legitimate to ask, is ovipositing under active physiological conditions partly involuntary ?

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* Only the following references to the subject have been found :
L. Boutreux : **Ann. Sci. Nat. (Bot.),** series 6, vol. 17, p. 149., 1884.
E. Reukauf : **Kleinwelt** 1911/12, p.25.
Schuster & Ulehla : **Ber. d.d. Bot. Ges.,** 1913, p. 129.
Stolz : **Mikrokosmes** 1911/12, p. 202.

DO BEES SEE WITHIN THE HIVE ? No hive is absolutely dark and some authorities think that bees can therefore see within the hive, aided by their senses of touch and smell; for instance, in egg laying, it seems clear to us that a queen must be guided by a sense of touch (of contents) and smell (of food in the cell) in order to perform her functions. The same applies to the workers.

THE BEST BEES. Dr. C. C. Miller, the celebrated international authority, whose knowledge solidly rests on extensive experience combined with **study and open-mindedness,** has repeatedly said in these words and others: " there are good bees of almost all kinds." We cannot give a better answer.

INCUBATING QUEEN CELLS. During the last three days before emerging a queen is less likely to suffer through slight rough handling of the cell. A " ripe " cell is therefore the safest to incubate artificially, but this would only save less than half the time for incubation after capping. Although the thinning of the capping by the bees is meant to help the emerging queen, experience has clearly demonstrated that it is not vital.

THE ATMOSPHERE OF INDEPENDENCE. A colony is certainly a unit. Divide its members intelligently whether by the use of a queen-excluder-division board or by a complete divider, and you will create an atmosphere of independence, although the building of queen cells in the section not favoured by the queen may not be immediate.

CHILLED BROOD. An important gross sign of the affected brood comb, noticeable to the naked eye, is the widespread death of the brood if chilled, whereas in foul brood an irregular affection is generally met with. If capped, the **flat** surface of the cell capping is noticeable, otherwise the larvae will protrude from the cells, heads first, and will retain their colour for some time. This reminds us of mentioning that we have kept uncapped brood for about 4 hours at room temperature (not more than 50° F.) and although the larvae moved their position slightly, they were certainly not dangerously chilled, as they finally developed when returned to the hive. Daily examination was made on 4 consecutive occasions. This provides an interesting field for research and seems to show that a temperature of, say, 60° F. is good enough as a standard one for manipulating and thorough inspection. A higher degree (70 F.) for grafting and a still higher one (95-97 F.) for the artificial fertilisation of drone eggs are different things.

SWARMS AND COMB FOUNDATION. With wax comb foundation, it is certainly advisable to associate one or two drawn out combs when hiving a swarm so as to prevent the sagging of the foundation, especially in hot weather. In addition, the combs greatly encourage the establishment of the swarm and mean the ready ovipositing by the queen. This in turn means an early generation of bees. Better still, whenever possible, give a swarm a comb of emerging brood. This supplies a desirable batch of nurse bees and, as a rule, will prevent the swarm from decamping, unless bad weather and starvation threaten, the latter being an avoidable condition with proper management.

WIRING FRAMES. Many designs and devices have been suggested for a generation from a single wire to wide-meshed gauze, and the discussion of this subject is still swinging forwards and backwards, especially in America where many appear to favour two lines of horizontal wiring close to the top bar.

INSURANCE AGAINST BEE STINGS TO CATTLE. The best insurance is a high hedge for your apiary. We consider this a necessity in ours, which adjoins fields and meadows. Bees will thus be forced to fly high, and there is no danger of concussion with and of stinging any beast. It is quite incorrect that holes in a high fence are necessary or will ever be used by flying bees. A horse or a cow will not succumb to a few stings. The danger is from a swarm alighting on a beast and forcing it to rub itself against the hedge or the ground, for instance. Your next valuable insurance, therefore, is observation. Your third insurance is the one offered by your Association. The intended increase of your colonies will not make much difference to the small premium charged.

FANNING. Fanning has more than one significance according to circumstances. It sometimes indicates the rejoice of stray bees at last finding their home, at other times the care of old ones guiding the young, an endeavour to ventilate the hive and ripen the honey, etc.

Active Fanning is associated, as a rule, with the exposition of Sladen's " Scent-producing organ." This seems to show that bees rely on the sense of smell for guidance. Bees fanning on the floor board of the hive are often seen to expose their " scent-producing organ "—an action which suggests an endeavour to impregnate the atmosphere of the hive with a particular odour, unless this exposition is involuntarily due to their physical attitude while fanning.

The Bee World.

THE OFFICIAL ORGAN OF THE APIS CLUB.

Edited by A. Z. ABUSHÂDY, F.R.M.S.

With the collaboration of: the Rev. John Beveridge, M.A., B.D., E.B: S.B.A., M.B.E.; Miss Annie D. Betts, B.Sc.; the Rev. R. Doupe; A. F. Harwood; J. Herrod-Hempsall, F.E.S.; C. P. Jarman; W. H. Simms, B.B.K.A.; and R. Whyte.

Literary Correspondence: Literary correspondence should be addressed to the Editor, accompanied by a stamped addressed envelope when a reply is expected. In view of the public character of this magazine and the almost overwhelming occupation of the editor, he relies on the co-operative spirit and good nature of correspondents in avoiding on the one hand unnecessary correspondence, and in helping on the other hand to reduce the postal expenses of THE BEE WORLD and **The Apis Club** which are exceptionally heavy.

Having regard to the limitations of our space, our able contributors will greatly assist by considering 500 words a maximum limit for any single contribution as an article. Letters to the Editor for publication should be very brief.

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